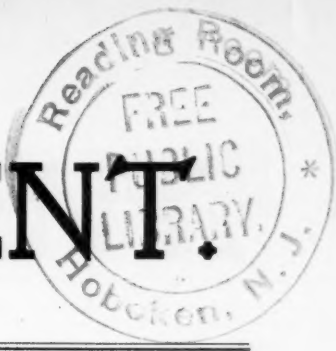


# CITY GOVERNMENT.

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NEW YORK, AUGUST, 1899.

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## CITY GOVERNMENT.

*Devoted to all Departments of City Work*

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### SPECIAL NOTICE.

*City officials and friends of City Government visiting New York are cordially invited to make the office of City Government their headquarters during their stay in the city. Desks, stenographers and stationery are placed at their disposal, and their mail may be addressed in our care.*

*WANTED—A few copies of City Government of November, 1896, for which 25 cents a copy will be allowed. City Government Publishing Co., Troy, N. Y.*

## CLEAN CUT AND INTERESTING.

Mr. John Caulfield, for thirty years the executive officer of the waterworks at St. Paul, Minn., and a former president of the American Water Works Association, is a gentleman who knows every inch of the water supply business. He has been a reader of this paper ever since its establishment and says:

"Every water-works man in the country ought to be a regular reader of CITY GOVERNMENT, because he will find in it many valuable suggestions which will aid him in promoting the efficiency of his service. I like CITY GOVERNMENT because it prints facts and advances no theories. It is a clean cut journal. I am not only interested in what it publishes concerning water departments, but I find that every issue contains matter regarding other branches of municipal work which I like to read."

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## MUNICIPAL STATISTICS, THE CENSUS AND BEMIS.

Statistics, like everything else on earth, are worth the cost of gathering only when they can be of some useful service to mankind. They can never be used for decorative purposes, nor can they be made into soup to feed to the unemployed. Old statistics are useful for historical purposes only; new statistics can sometimes be used in the dealings of the present, in estimating the cost or effect of a contemplated work and in refuting representations that are untrue. However, it must be remembered that an untruthful statement can never be disproved by a lie given unwittingly or otherwise, and for that reason statistics used for the assertion of the truth must be marked with their date. Statistics of two or three years ago are not statistics of to-day; they can not be used as numeral facts of to-day. When they are used in the calculations of the present in any form other than historical they become numeral lies. Thus it is that we sometimes find the old saying, "Figures don't lie," boldly and successfully denied. With clever manipulation figures can be appropriately dedicated to Munchausen.

It is well enough to preserve statistics for historical purposes, but let the preserved figures remain in their proper place. Do not bring them forth to controvert the facts of to-day; they are of no value for such use. This is a progressive age; two or three years is a long time when measured by the accomplishments of modern ingenuity, and what were facts last year cannot be put forth as such to-day.

These few remarks are intended to bear on the gathering of municipal statistics by the federal government. The bureau of labor began to compile statistics on public service industries about three years ago; some of their figures were collected in 1897, some in 1898, some in 1899, some more will be collected in 1900, and then some day, no prophet can tell just when, all of these expensively gathered statistics will be printed together and "dead-headed" through the postoffice to the public. How the figures in that book will lie is a caution. Facts of 1897 and facts of 1899 will make liars of each other.

For instance, Smithville's municipal light plant may be shown to be operating at an expense of \$75 per lamp, while Jonesville, under the contract system, may be shown as getting its lights at \$70. Here is proof, according to the labor bureau's book, that municipal ownership would not be a good thing for Jonesville to go into. That the labor bureau collected its figures from Smithville in 1897 and from Jonesville in 1899 is an important item, but will it be printed with the figures? Even if it is—then of what value are the figures from Smithville? They show merely the historical fact that the Smithville plant was being operated in 1897 at an expense of \$75 per lamp,

which may be interesting, but it is certainly not important. The important thing for Jonesville to know is what lights are costing Smithville now, and if the figure is found to be \$60, then it will be well for Jonesville to put a competent engineer to work and ascertain whether or not she can reduce the cost of her lights.

The labor bureau's work on statistics relating to municipalities will not be worth anything near its cost. It is likely to do more harm than good. Despite this fact, a proposition has recently been made to include statistics of municipal works in the next census. The fact that the temporary office of the census inspector has so much work to do that none of it is ever done properly ought to be pretty well known by this time. It was only a short time ago that the American Economic Association published a book of criticism of the last census—and it took over five hundred pages to point out the mistakes made by Mr. Porter and his subordinates. If Mr. Porter, an able man, found it impossible to successfully accomplish the work assigned to the census bureau, what are we to expect from the present director, Mr. Merriam? No one who knows Mr. Merriam will expect him to succeed where Porter failed. In commenting upon the project to burden the census office with the new duty of collecting data on municipal affairs, the "Engineering News" puts it right in saying: "The experience gained in collecting, digesting and publishing the enormous mass of information gathered in 1880 and 1890 gives ample evidence that fewer things should be attempted in the hope that more things should be done well."

Now we come to Professor Bemis, who has recently put out a book, entitled "Municipal Monopolies." In this volume the professor has a chapter under the caption of "Latest Electric Light Reports," and this chapter is burdened with statistics from nearly every town in existence, and from one town, at least, not in existence. The chief fault with the "latest electric light reports," as given by Professor Bemis, is that they are antiquated. We have only enough space to point out a few of the professor's mistakes:

#### CONTRACT PRICES OF ARC LIGHTS.

	Bemis' figures.	Correct figures.
Des Moines .....	\$126.00	\$75.00
St. Cloud .....	85.00	75.00
Fort Wayne .....	120.00	100.00
Minneapolis .....	115.00	108.50
Mobile .....	69.50	88.00
Amsterdam .....	98.00	94.50
Newburgh .....	64.00	96.22
Chillicothe .....	75.00	65.00

The Bemis figures might have been all right two or three years ago, but they are dangerous things to handle in arguments of to-day. The man who bases his argument on figures from the "latest electric light reports," as published in "Municipal Monopolies," takes the chance of being discredited.

#### A TAXPAYER'S ACTION FAILS.

"A taxpayer's action to restrain waste or injury of public property will only lie where the officials proceeded against are threatening to do an act in respect to which they have no jurisdiction, or are without power, or where they are charged with fraud and corruption."

Above is the ruling of the Supreme Court of New York state, upon which a taxpayer's action to restrain the council of Rochester from consummating a contract with the Home Telephone Company

failed. The taxpayer who brought the action is interested in the telephone concern now operating at Rochester. He sought to have the new company shut out of the field by alleging that the council, in granting it a franchise at a time when it was offered \$15,000 for a similar grant by another party, wasted public property. His complaint was demurred to, and in sustaining the demurrer, the court declares that it was properly within the discretion of the council to reject the \$15,000 offer and grant the franchise to the Home Company without such remuneration to the city. Says the court:

The judgment of the court is not to be substituted for the judgment of the common council in deciding to whom the privileges shall be awarded. The statute having made the common council the body to consider and pass upon the question in view of all the circumstances that are likely to surround it, the subject belongs to that body alone, not to the courts.

This decision is in line with the ruling of the New York courts in cases where contracts for public work awarded to high bidders have been in question. The courts have invariably held that municipal boards are not required to let contracts to the lowest bidder when, in their judgment, it would be to the best interests of the city to accept a higher bid.

#### A FAIR DISCUSSION.

In the past the League of American Municipalities has been justly criticised for confining its discussions of the important question of municipal ownership to the affirmative side. We are pleased to see that the League is to take up the argument on this perplexing question at its Syracuse meeting next month, in a manner that insures a fair showing for those who are opposed to the municipalization of such industries as electric, gas and street railway plants. There is certainly much to be said on the negative side of this proposition, and the League, composed as it is of city officials, ought to hear it.

From the program we observe that the Syracuse convention is to listen to such competent speakers as M. J. Francisco, Allen Ripley Foote, M. A. Gemunder, Henry L. Doherty, J. B. Cahoon and R. P. Porter on the subject of municipal ownership. Messrs. Francisco and Foote are known throughout the country as economists who have devoted much time to the study of what are commonly termed municipal monopolies; Mr. Gemunder was for some years the director of public improvements at Columbus, Ohio, and is well posted on public service industries, and Messrs. Doherty, Cahoon and Porter are splendid representatives of the private electric interests of the United States. These men are all opposed to municipalities going into industrial enterprises, and the reasons for their opposition will be both interesting and instructive to the city officials who will gather at Syracuse.

#### MORELAND AS A SURGEON.

A most delicate surgical operation has been successfully performed under the supervision of President Moreland, of the Detroit board of public works. For forty years a private building has projected twelve inches into one of Detroit's most useful alleys, and a week or so ago, when the board of works decided to lay a good brick pavement in that particular alley, it became necessary to amputate the end of this building in order to make a good job of the improvement. Undisputed possession for forty years was a pretty good legal point in favor of the owner

of the projecting building, but it did not deter Mr. Moreland from getting it out of the way for his brick pavement. He just waited until after 4 o'clock one afternoon, when it was too late in the day for "government by injunction," and then sent one of his trusty lieutenants with a small army of carpenters to the place and literally sawed off twelve inches from the north end of the building.

#### CHEAP ADVERTISING.

The item about the electric appliances used for installing a fire alarm service in Windsor Castle being of American manufacture is going the rounds of the daily press, successfully carrying with it the free advertisement of a small electrical house in Connecticut. The Gamewell Fire Alarm Co. of New York, who furnished the most important part of the American materials used in the Queen's fire alarm service, is not sharing in the free advertising of the occasion. This is not because the Gamewell people are not deserving of mention in the case, but because they are not of the sort who practice cheap methods.

#### NATURAL GAS FRANCHISE GRANTED.

The council of Columbus, Ohio, have passed an ordinance granting the Federal Gas and Fuel Company the right to establish and operate a natural gas plant. The ordinance grants to the company the right to use the streets and avenues of the city provided it can deliver a flow of natural gas equal to 6,000,000 cubic feet per twenty-four hours at the corporation line. The streets to be torn up must be replaced in a satisfactory manner under the direction of the chief engineer, and the company is required to give bond in the sum of \$50,000 for the faithful performance of its contract. The franchise is granted for a period of twenty-five years, but the city may purchase the plant after three years by the payment of a price to be fixed by two of three arbitrators. The gas pressure is to be measured by gauges to be maintained by the company at their own expense, and the director of accounts has the right to inspect the books of the company at reasonable times.

#### LOS ANGELES LIGHTING CONTRACT.

Mayor Fred Eaton, of Los Angeles, Cal., writes to "City Government" that the street lighting question in his city has been settled for one year by awarding a contract to the Los Angeles Electric Company for arc lamps of 2,000 c. p., burning all night and every night, at \$60 per lamp per year. The mayor writes that the proposal of the water power company, which involved municipal ownership of the distributing system and the furnishing of the electric current only by the contractor, would have been accepted had not legal complications prevented. The legal difficulties, the mayor hopes, will not stand in the way at the next letting, a year hence.

#### LIGHT PROPOSITION AT ZANESVILLE.

Three citizens have proposed to build an electric plant at Zanesville, Ohio, and give it to the city on condition that they be given a contract to operate the plant for seven years and receive \$85 per year each for 250 2,000 c. p. lamps from the city. The city is also asked to provide the building for the plant and free water for its operation. The proposition is now being considered by the council.



# LEAGUE OF AMERICAN MUNICIPALITIES

## Municipal Ownership to be Argued.

The League of American Municipalities, at its third annual convention, to be held at Syracuse, N. Y., Sept. 19-22, will add materially to the information now in circulation on that most important of all municipal questions, the public ownership of light and water plants. Nothing has attracted more earnest public attention in recent years than the municipalization of public service industries in this country. As the movement has progressed it has had to meet a most substantial opposition from those who do not believe that industrial enterprise should be attempted by the government. Despite this serious opposition the movement has grown with rapidity throughout the United States, until political parties have considered it expedient to place in their local platforms the most emphatic declarations in favor of municipal ownership. This question has been paramount in political contests waged in New York, Chicago, New Orleans, San Fran-

standpoint. Formal papers presenting the arguments for municipal ownership are to be prepared and read by Mayor Henry V. Johnson of Denver, Mayor Gustav Tafel of Cincinnati, Mayor F. G. Pierce of Marshalltown, Ia., and Mayor J. R. Robinson of Colorado Springs, Col. Papers against municipal ownership are then to be presented by the Hon. M. A. Guemunder, ex-director of public works, Columbus; Hon. Robert P. Porter of New York, the former census supervisor; J. B. Cahoon of Elmira, N. Y., vice president of the National Electric Light Association, and M. J. Francisco of Rutland, Vt., who is probably the best known and most active of all the antagonists to municipal ownership. Following the reading of these eight papers an entire half-day will be devoted to a general discussion of the question, to be led on the affirmative side by Mayor John Mac Vicar of Des Moines, Prof. Edward W. Bemis, the most conspicuous advocate of collectivism in this

has been much difficulty in keeping step with the march of progress, so that improvements in pavements, sewers, street cleaning and other departments are being rapidly carried forward.

The manufacturers of the city are more prosperous than at any previous period. Many of the manufacturing institutions are running night and day, and still they are unable to fill their orders. Their products in several instances have gained world-wide reputations.

Under the leadership of Mayor McGuire several improvements in the administration of the city's affairs have been made to keep pace with the times—notable among these are the municipal lodging house and the thorough organization of the street cleaning department after the plan of the late Colonel Waring. The mayor has also pushed the improvement of the streets forward with a vigorous hand.

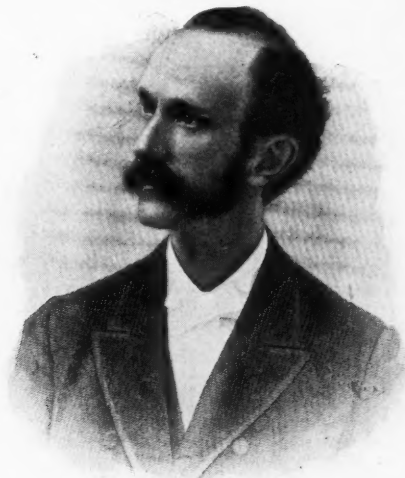
The fire department, under the management of Chief Quigley, has attained



P. H. WESSEL, Moline, Ill.



ELLSWORTH F. GILES, Altoona, Pa.



HUGH STERLING, Bridgeport, Conn.

RECENTLY ELECTED MAYORS WHO WILL ATTEND THE SYRACUSE CONVENTION.

cisco, Denver, Detroit, Milwaukee, Toledo and other large cities.

That the municipalization of light and water plants has gained ground rapidly is shown by authentic statistics. Ten years ago there were scarcely more than a score of publicly owned electric light plants in this country; to-day nearly 400 municipalities own and operate works of this kind. In 1890 only 42 per cent. of the water plants in the United States were publicly owned and to-day the per centage is about 54.

Municipal ownership, like all other questions, has two sides. The arguments, both pro and con, are well founded and intensely interesting. At the two preceding conventions of the League of American Municipalities this question has been discussed at length, but only the affirmative side has been presented. The program committee for the coming Syracuse convention have determined upon a plan that will bring forth the most comprehensive and the fairest discussion of this question ever presented in this country. They have decided to set aside one whole day for the treatment of the subject, and to have it discussed from every

country; Mayor James D. Phelan of San Francisco, Mayor R. H. Dudley of Nashville, and others. The negative side of the discussion will be led by Allen Ripley Foote, the well known writer on economic questions; Henry L. Doherty of Madison, Wis.; General Andrew Hickenlooper of the Cincinnati Gas and Electric Company, and others.

The day of the convention set aside for this interesting discussion is Wednesday, Sept. 20, and it is very likely that the eyes of the country, figuratively speaking, will be on Syracuse for that day.

## Syracuse—The Convention City.

Nestled among the hills of Onondaga, with a beautiful sheet of crystal water, seven miles long, lying just north of the city, shaded by magnificent elms and maples, is Syracuse, the next meeting place of the League of American Municipalities. It possesses some streets which for beauty cannot be surpassed in the United States, and there are few that equal them.

The growth of the city has been so rapid during the past decade that there

an enviable state of perfection, so that visitors cannot fail to be profited by a careful inspection of it and its methods.

The water department will attract much attention because it is one of the largest gravity systems in the country. As to quality of water supplied, the system as a whole and methods of administration, none is better and few there be which equal it. William R. Hill has been the efficient superintendent from the beginning of its construction.

## National Municipal Exhibition.

At Syracuse, N. Y., Sept. 19-22, in connection with the annual convention of the League of American Municipalities, there will be an exposition of no small proportions. It will be the First National Municipal Exposition, and the exhibits will include all the latest and best apparatus and supplies used in city work. Among the hundreds of things to be exhibited for the benefit of the multitude of city officials who will gather at Syracuse that week will be street sprinklers, road rollers, street sweepers, lamp-posts and lamps, paving materials, catch basins,

sewer construction materials, fire apparatus, water meters, electrical apparatus, garbage wagons, ash carts, water filters and, in fact, everything used in the public service. There will be models of garbage crematories, complete fire-alarm and police telegraph systems, voting machines, an automatic catch basin cleaner, street flushing devices and many other novelties designed to promote the efficiency of departmental work.

### The Convention Program.

TUESDAY, SEPT. 19,

10:00 A. M.

Address of Welcome to the State,  
Hon. Theo. Roosevelt, Governor of New York.

Address of Welcome to the City,  
Hon. Jas. K. McGuire, Mayor of Syracuse.

Response for the League,  
Hon. Samuel L. Black, President L. A. M. President's Annual Address.

2:00 P. M.

Secretary's Annual Report.  
Treasurer's Annual Report.

### IMPORTANT NOTICE.

At this stage of the proceedings the Question Box will be opened for the receipt of written queries on all subjects pertaining to municipal government. All delegates are requested to deposit in this box all questions upon which they may desire information. Questions may be deposited in the box at any time during the convention until 10 o'clock Friday morning, when they will be taken from the box and submitted to the meeting for replies and discussion. Questions pertaining to the following subjects will receive attention:

The Fire Service.  
Public Water Supply.  
Parks and Playgrounds.  
Street Lighting.  
City Ordinances.  
Taxes and Finance.  
Street Paving.  
Sewers and Drains.  
Public Bath Houses.  
The Police Service.  
City Printing.  
Street Cleaning.

### TOPIC NO. 1:

"The Collection and Disposal of Garbage." What are the methods in use and what is the cost of operation?

Papers by—

Hon. J. J. Williams, Mayor, Memphis, Tenn.

William C. Woodward, M. D., Health Officer, Washington, D. C.

H. J. Gonden, Editor "City Government," New York City.

General Discussion—

Led by Mayor Conrad Diehl, Buffalo, N. Y.; Mayor James K. McGuire, Syracuse, N. Y.; Mayor William C. Maybury, Detroit, Mich.; Alderman T. D. Fitzgerald, Albany, N. Y.; Councilman David P. Whealan, Richmond, Ind.

7:00 P. M.

Entertainment.

WEDNESDAY, SEPT. 20,

10:00 A. M.

Address, "Municipal Charities,"

Hon. Homer Folks, Alderman, New York City, and Secretary of the New York State Charities Aid Association.

Discussion.

### TOPIC NO. 2:

"The Special Assessment System for Public Improvements." How should assessments be levied? What portion of the cost of public improvements should be assessed against property benefited, and what portion should be paid from the general taxes? How should the cost of improvements at street intersections be assessed, or should it be paid from the general taxes?

Papers by—

Hon. J. A. Johnson, Mayor, Fargo, N. D.  
Hon. John B. Weakley, Jr., Mayor, Florence, Ala.

General Discussion—

Led by Mayor James Gray, Minneapolis, Minn.; Mayor C. C. Duryee, Schenectady, N. Y.; Alderman A. J. Ross, Louisville, Ky.; Alderman C. E. Lowe, Saginaw, Mich.; Alderman E. J. Meyer, Montgomery, Ala.; Alderman J. G. Olmstead, Des Moines, Ia.

2:00 P. M.

### TOPIC NO. 3:

"The Municipal Ownership of Public Service Industries." What industries should the cities own and operate? How and by whom should a city plant be managed?

Papers in favor of municipal ownership by—

Hon. Henry V. Johnson, Mayor, Denver, Col.

Hon. Gustav Tafel, Mayor, Cincinnati, O.  
Hon. J. R. Robinson, Mayor, Colorado Springs, Col.

Hon. F. G. Pierce, Mayor, Marshalltown, Ia.

Papers against municipal ownership by—  
Hon. M. A. Guemunder, Sinking Fund Commissioner, Columbus, O.

Hon. J. B. Cahoon, Vice President National Electric Light Association, Elmira, N. Y.

Hon. M. J. Francisco, Rutland, Vt.  
Hon. Robert P. Porter, former census supervisor, New York City.

7:30 P. M.

General Discussion of Topic No. 3:  
"Municipal Ownership of Public Service Industries?"

Affirmative led by Mayor John Mac Vicar, Des Moines, Ia.; Mayor R. H. Dudley, Nashville, Tenn.; Mayor James D. Phelan, San Francisco, Cal.; Mayor Thomas Taggart, Indianapolis, Ind.; Mayor P. J. Kirschner, St. Joseph, Mo.; Mayor John M. Redmond, Cedar Rapids, Ia.; Alderman Hector Dulaney, Louisville, Ky.; Alderman Isaac Hirsch, Cumberland, Md.; Alderman Joel H. Cutchin, Roanoke, Va.; Alderman John Hannigan, New Bedford, Mass.

Negative led by Allen Ripley Foote, Tacoma Park, D. C.; W. Worth Bean, St. Joseph, Mich.; H. L. Doherty, Madison, Wis.; General Andrew Hickenlooper, Cincinnati, O.

THURSDAY, SEPT. 21,

10:00 A. M.

Address, "The New Patriotism; A Golden Rule Government,"

Hon. Samuel M. Jones, Mayor, Toledo, O.

### TOPIC NO. 4:

"The Contract System for Street Improvements." Should such improvements as the construction of sewers, waterworks, sidewalks, pavements, grading, etc., be done under the contract system or by the municipality as the employer of day labor?

Papers by—

Hon. George R. Perry, Mayor, Grand Rapids, Mich.

Hon. W. E. Young, Mayor, Akron, O.

General Discussion—

Led by Mayor Charles S. Ashley, New Bedford, Mass.; Mayor Edwin W. Fiske, Jr., Mount Vernon, N. Y.; Mayor J. Adger Smyth, Charleston, S. C.; Mayor James G. Woodward, Atlanta, Ga.; Mayor Arthur C. Hastings, Niagara Falls, N. Y.; Alderman Joseph D. Grinnell, Providence, R. I.; Alderman Lars M. Rand, Minneapolis, Minn.; Alderman L. A. Goudy, Portland, Me.; Alderman A. A. White, Independence, Mo.

2:00 P. M.

Entertainment.

8:00 P. M.

Address, "Municipal Water Supplies,"

William R. Hill, Chief Engineer Syracuse Water Works and First Vice President of the American Water Works Association.

Address, "Public Improvements at New Orleans,"

Hon. William C. Flower, Mayor, New Orleans, La.

Address, "Sewage Disposal Problems,"

G. Everitt Hill, New York City, of the Staff of the Late Colonel George E. Waring.

Address, "English Cities at Work,"

Hon. Frederic C. Howe, Cleveland, O.

Address, "Inadequate Compensation to City Officials,"

Hon. Elias Goodman, Alderman, New York City.

FRIDAY, SEPT. 22,

10:00 A. M.

Address, "Constitutional Limitations of Municipal Indebtedness in Relation to Public Improvements,"

C. W. Tooke, of the University of Illinois.

Opening of the Question Box.

2:00 P. M.

Reports of Committees.

Election of Officers.

Election of Next Meeting Place.

8:00 P. M.

Entertainment.

### A Golden Rule Government.

Samuel M. Jones, the distinguished mayor of Toledo, has taken for the subject of his address before the coming convention of the League of American Municipalities "The New Patriotism—A

Golden Rule Government." The title is suggestive of new ideas, and no one is more capable of conceiving and expressing them than Mayor Jones. The convention is to be held at Syracuse, N. Y., Sept. 19-22.

### Garbage Collection and Disposal.

A vital question in nearly every American city is how to collect and dispose of garbage in the most sanitary and economical manner. H. J. Gonden, editor of "City Government," has for some months been collecting information relative to the sanitary and economical features of the various systems of garbage collection and disposal. His investigation covers nearly all of the important cities in the country and it will be summed up in a paper to be read before the coming convention of the League of American Municipalities, at Syracuse, N. Y., Sept. 19-20. Dr. William C. Woodward, health officer of Washington, D. C., and Mayor J. J. Williams of Memphis, Tenn., will also read papers on the garbage question at this convention. Dr. Woodward will review his experience in the handling of garbage at Washington and also give the conclusions he has reached after a study of this important work in a number of cities. Mayor Williams has been investigating garbage collection and disposal with great care, and his paper will convey much valuable information. After the reading of these papers the convention will enter into a general discussion of the subject, to be led by Dr. Conrad Diehl, mayor of Buffalo; Mayor W. C. Maybury of Detroit; Mayor J. K. McGuire of Syracuse; Ald. T. D. Fitzgerald of Albany, and Councilman D. P. Whealan of Richmond, Ind.

### Mayor Ashley of New Bedford.

Here is a good likeness of Charles S. Ashley, mayor of New Bedford, Mass., and one of the trustees of the League of American Municipalities. The portraits of all the other officers of the League have been published in preceding issues of this paper, but until this month we have been unable to secure a copy of Mr. Ashley's pleasing countenance. The mayor of New



MAYOR CHARLES S. ASHLEY.

Bedford is of the rare type of men whose popularity encourages familiarity from small boys. All the lads in Mayor Ashley's city call him "Charley." That he is as popular among the voters as he is among the boys has been demonstrated in more than one municipal campaign in which the mayor made his opponent look like 29 cents marked down from 30.



**The Yates—Headquarters.**

The Yates, one of the finest hotels in New York state, will be headquarters for the delegates in attendance at the convention of the League of American Municipalities at Syracuse next month. This house will also be headquarters for the conventions of the International Association of Fire Engineers, Aug. 22-25, and the New England Water Works Association, Sept. 13-15.

City officials in all parts of the country have already begun to reserve rooms at the Yates for the League convention. The attendance at the meeting will be very large and it is therefore wise to engage hotel accommodations in advance. The



THE YATES.

Yates is directly across the street from the City Hall, and within three minutes' walk of the Auditorium, where the sessions of the convention are to be held. That it will be a most convenient place for the delegates to stop goes without saying.

Averill & Gregory, the proprietors of the Yates, are hotel men of national reputation, and their Syracuse hostelry is favorably known throughout the country for its splendid furnishings, excellent cuisine and liberal management. The members of the League are fortunate in having such a fine hotel in their convention city.

**Rapid Increase in Membership.**

The increase in the membership of the League of American Municipalities since its convention of last year has been more than 50 per cent. It is expected that there will be a further increase to 75 per cent. by Sept. 19, when the third annual convention opens at Syracuse, N. Y. The continuous growth of this organization betokens an encouraging interest on the part of municipal officers in their official work. It shows that the efforts of the League to promote the cause of good, intelligent and progressive city government are being strengthened and supported by a constantly increasing number of municipalities. Although the League is only two years of age it has members in 35 of the 45 states.

**Toledo Will Come Strong.**

Mayor Jones has signed the bill appropriating \$3,000 for the expenses of the Toledo city officials in attending the Syracuse convention. In an interview in the "Toledo Commercial," the mayor said:

I approve the appropriation for the visit of the city officials to Syracuse to attend the convention of the League of American Municipalities, because I believe the educational value of the meeting will many times repay the cost to the people of Toledo.

The meetings of the League are attended by the officials of the leading cities of America. The reports of the past meetings and the program for the coming meeting show that the addresses and papers are by the best and most thoughtful minds that

benefit to be obtained from such an exchange of ideas as will be had at the convention cannot fail to result in a great deal of good. I am looking forward with much pleasure to listening to the discussions there. Some of the speakers are gifted ones and have an extended knowledge of the subjects they are to talk upon. I have no doubt that the convention will be a successful one and I hope that the attendance from here will be large. I wish, in fact, that all the members of the city government might go. It would be a great thing for the city."

**Notes of the Convention.**

—Mayor Wessell and a good-sized delegation of aldermen and other city officials will represent Moline, Ill.

—Altoona, Pa., will have a big delegation of earnest men. Both branches of councils have already named their representatives and arranged for their trip to Syracuse.

—The council of Albany has elected a delegation of three aldermen—T. D. and J. F. Fitzgerald and Davis. Ald. T. D. Fitzgerald is one of the prominent union labor leaders of New York state.

—Mayor Johnson of Fargo has been the sole representative of his city at the two last conventions, but this year he will be accompanied by his city engineer and some members of the Fargo council.

—Cornelius T. Driscoll, the new mayor of New Haven, Conn., has announced his intention of being present at the convention. The mayor is a most pleasing orator, and he will be prominent in the convention discussions. A number of other officials will also come from New Haven.

—New York has more members than any other state has in the League. Fourteen cities of the Empire state are now on the membership roll, and this number will be materially added to before the Syracuse convention. Ohio is a good second with twelve members, and Iowa and Michigan share third place, with six members each.

—Atlanta, Ga., as usual, will have a large and active delegation at the convention. Mayor James G. Woodward has already appointed the delegates from the city council who will accompany him to Syracuse. From the board of aldermen will come Frank P. Rice and I. S. Mitchell, and from the council the delegation will consist of T. A. Hammond, Jr., J. S. Parks, J. W. Pope and D. N. McCullough.

**"THE BIG FOUR."**

The four large cities of the middle West owe much of their present prosperity to the most excellent service afforded by the world-famed "Big Four Railway." With its geographical centre at Indianapolis it stretches itself out to the north, south, east and west, like so many helping hands. Through its beneficent influence populous centres, great and small, have sprung from the earth as by magic. The four cities will soon have multiplied one hundred fold. In equipment and management this system is all that could be desired.

The League of American Municipalities will convene, 2,500 strong, for its third annual convention, in Syracuse, N. Y., September 19-22. Such as live in the vicinity of the "Big Four" system will not be disappointed if they seek transportation over its lines when going to the convention. Particulars as to time and rates can be had of the General Passenger Agent of the Big Four Railroad, Cincinnati, O.

—Lynchburg, Va., streets are lighted exclusively by electric arcs of 2,000 c. p. There are 215 lamps, burning every night all night, and the contract price is \$65.70 per lamp per year. The contract is for ten years, ending in 1905.

we have on the subject of municipal government.

I want Toledo to be in the front rank of the progressive cities of the country and know of nothing that will contribute to that end more than the association of our city officials with the progressive and thinking men of other cities.

**New York will be Represented.**

The great city of New York will have an active delegation at the Syracuse convention. All of the members of the council and the board of aldermen and most of the heads of departments are warm supporters of the League and display much interest in its work. New York city is a member of the League, and its council and board of aldermen will be liberally represented at the Syracuse meeting.

**Boston will Send Delegates.**

The city council of Boston, on August 1, voted to accept the invitation of the executive committee of the League to send delegates to the Syracuse convention. The size and personnel of the delegation will be determined at an early date. It is very likely that six or eight delegates will be sent from each branch of the council.

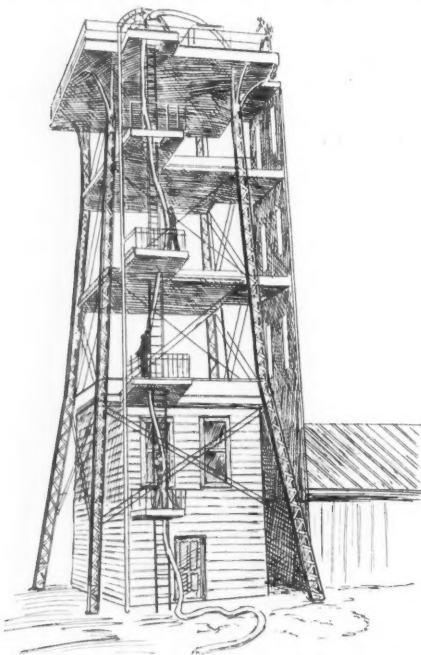
**What Mayor Preston Says.**

Mayor Preston of Hartford, Conn., in a recent interview, said: "I think Hartford has done a wise thing in joining the League of American Municipalities. The

# ~ FIRE DEPARTMENTS. ~

## San Francisco Practice Towers.

The San Francisco fire companies are now being drilled regularly on six-story practice towers, two of which have been recently built. One of the towers is entirely of wood, but the other, which is 69 feet high, has a steel frame and is constructed on the plan of the Eiffel Tower. It presents all the possibilities of San Francisco buildings. On one side is the fire escape and standpipes, on two more the open spaces for a variety of work and on the fourth, six stories of a frame house without a device of any sort to aid the fireman or afford him the slightest help should he be trapped by flames. It is on this side that the daring and bravery of the men will be sorely tried. They will, with the aid of ladders, work their way from story to story. The men who will handle these ladders are heavily belted. In each belt is an immense clasp hook by which the men can attach themselves to the ladders. There is also a hatchet holder and guard on each. The men ask every week to be permitted to begin this drill, but Engineer Shaughnessy is not willing to begin until he has



completed the arrangements for holding the net. The men are ready to run the risk without this precaution, but their chief is more conservative.

The record represents the time taken to get water from the hydrant to the top of the tower. The rivalry between the various companies is so keen that about two dozen stop watches are always drawn on the drillmaster. Then comes the drill, in which every man must participate. It is not enough that a fireman shall see a comrade tie a knot or adjust a hose or handle a rope. Each one has to actually do each thing himself, so that he shall not be at a loss when he has to climb and work around a burning building.

After the record is made in getting water on a building fitted with fire es-

capas and stand pipes, the men must get the hose to the top of the tower without these aids. This is done by gaining one story after another and passing the hose up.

## The Fire Record for 1898.

The Chronicle Fire Tables for 1898, just issued by the organ of the fire underwriters, set forth the fire losses in the United States for the last calendar year, with details and tables of the fires in that year and in the previous twenty-four years, and various other information relating to fires in this country.

In making up the table of fire losses thirteen distinct classes of property are considered: Dwellings and boarding-houses; stores; stables and barns; manufacturing establishments; hotels, clubs and restaurants; warehouses and store-houses; railroad property; theatres and halls; churches; colleges, schoolhouses and convents; goods in transit; public buildings, and hospitals. A class called miscellaneous includes those kinds of property, none of which burns in sufficient quantities to give to it a place by itself. In every class except the church class there was an increased number of fires in 1898 over that of 1897. In 1897 there were 735 church fires; in 1898 only 591. The average loss for each fire during the year has been reduced from \$6,922 in 1888 to \$1,868 in 1898; and the insurance loss from \$3,993 to \$1,056, both very remarkable reductions.

A curious but natural increase is noted in the number of fires caused by electric wires and lights. In 1888 there were only 66 such fires; in 1898 there were 958. The average loss has decreased, however, from more than \$10,000 in 1888 to less than \$6,000 per fire in 1898.

Of all causes of fire, defective flues come first as direct causes; they were responsible for 11.23 per cent. of all the fires of last year. Next comes incendiarism, responsible for 7.33 per cent. This seems a very large percentage, and argues much crime "unwhipped of justice." It would be interesting to know how large a percentage of the incendiary fires were set by policy-holders.

Exposure to fire accounts for 25.68 per cent. of all the fires of 1898. This, however, is an indirect risk. Firecrackers and fireworks caused only .81 per cent. of the fires last year, while lightning caused 3.70 per cent. Exposures caused more than their share of the total loss, while the losses caused by firecrackers amounted to only .18 of the total. Noisy patriotism is not especially costly.

Coming to the different classes of risks, we find that there were fires during 1898 in 41 electric light stations, in 24 factories where electric light, telephone and telegraph apparatus was made, in 6 stores where electrical appliances were sold and in 20 electric power houses. Eleven artificial ice factories were burned, 12 grand stands, 57 hospitals, 94 club-houses, 12 private and 10 public libraries, 14 railroad trains, 147 theatres, 223 vessels at wharves, one bicycle warehouse, 33 water tanks, 44 windmills and 2 windmill factories.

The record for twenty-four years places December as the banner month for fire losses. July of last year had the greatest number of fires, 9,572, but December kept its place with a larger loss than any other month.

Studying the direct causes of fires in the United States in 1898, we find that there were 14 dust explosions, 622 fires caused by electric wires and lights, 500 caused by firecrackers, 1,507 forest and prairie fires, 295 caused by friction in machinery, 6,891 incendiary fires, 3,479 fires caused by lightning, 210 caused by mischievous children, and 94 caused by natural gas. Oil stoves were responsible for 397 fires, open fireplaces for 410; sparks set 5,296 fires, spontaneous combustion caused 1,179; there were five fires caused by the sun's rays passing through window glass, and one fire caused by the rays passing through a glass bottle; tramps set 755 fires, not incendiary, and 12,204 fires had no assignable causes.

The experience of twenty-four years enables the compilers of the Chronicle Tables to make some unexpected statements. The chief cause of fires in asylums is defective flues; in bakeries, overheated and defective ovens; incendiarism accounts for most of the fires in barns, &c.; cigar stubs cause most of the fires in billiard rooms, while defective flues cause most of the boarding-house fires; matches start the fires in book stores, spontaneous combustion those in button factories; retail clothing stores suffer chiefly from incendiary fires, while clubs are the fire victims of defective flues. Lamp explosions cause the fires in crockery stores, while incendiarism starts most of the theatrical fires.

## Wilmington, Del., Fire Department.

Chief Sasse, of the fire department of Wilmington, Del., has submitted his report for the year ended May 15, 1899. During the year there were 133 alarms, the fire loss was \$80,449.64, with insurance of \$613,700. The apparatus of the department consists of three LaFrance, three Clapp & Jones, one Silsby and one Amoskeag steam fire engines, two double 60-gallon Holloway chemical engines, one Hayes truck, one Fire Extinguisher Company's combination truck and chemical, one Holloway combination hose wagon, three four-wheel Silsby hose carts, one four-wheel Amoskeag hose cart, one four-wheel hose cart built by the Phoenix Fire Company, two American Fire Engine Company hose wagons, one Gleason & Bailey hose wagon and one ambulance. The equipment consists of 10,950 feet of first-class hose, 391 gallons capacity of chemicals, 488 feet of ladders and the necessary equipment of one first-class and one second-class truck. There are 37 horses in the department. There are nine companies and nine fire houses. There are 60 fire-alarm boxes and five tower bells are connected with the fire alarm telegraph.

## Chief McGuire's Annual Report.

Chief John E. McGuire of the Savannah, Ga., fire department, sends us his last annual report, from which the following statements are taken. During the



year the force was increased by the addition of one engineer, two firemen and five supernumerary firemen, and it now consists of the chief, one assistant chief, one superintendent of fire alarm, one superintendent of horses, one clerk and storekeeper, six foremen, five engineers, seventeen drivers, forty uniformed firemen, five supernumeraries and ten volunteers. The force is divided into one engine company of nine men, one engine and truck company of seventeen men, one engine and truck company of thirteen men, one engine and chemical company of fifteen men, one engine and chemical company of twelve men, one truck company of five men and one volunteer hose company of ten men. The value of the fire department property is \$167,275. The total expenses for the year amounted to \$65,973.82, of which \$52,954.01 went for salaries.

There were 293 alarms during the year, and a total fire loss of \$440,630.78. The loss is in excess of that for the preceding year, but this is explained by the fact that there were about 100 more alarms in 1898 than in any year of the past. In December the new law passing the management of the fire department from a board of commissioners to a council committee went into effect.

#### Fire Department Items.

—Scranton, Pa., has outgrown the volunteer fire service, and a paid department will soon be organized.

—Pierson Lobdell has been appointed a fire commissioner at Watervliet, N. Y., to succeed James O. Wood, deceased.

—The salary of the chief engineer of the fire department at Erie, Pa., has been raised from \$1,300 to \$1,500 per year.

—The Elmira and Syracuse fire departments have recently opened schools of practice in life saving similar to those employed by the New York city fire department. Chiefs Campbell and Quigley intend to keep their departments as good as the best.

—Chief Kendall wants to equip all the fire department vehicles in Detroit with rubber tires. The use of rubber tires in the New York fire department has been so successful that the smaller cities throughout the country are adopting them rapidly.

—Supt. Grant of the fire alarm system of New Haven, Ct., recently made a tour of inspection of alarm systems in other cities. He now recommends to the New Haven commissioners that the latest Gamewell appliances be adopted, in order to bring the service up to the highest point of efficiency.

—New Orleans is to have a complete and up-to-date fire alarm system. The contract for its installation has been awarded to the Gamewell Fire Alarm Telegraph Company by the city council. Everything used in the construction of the new plant will be of the very best class. The total amount of the contract is \$73,000.

The board of trustees of the Hudson Firemen's Home recently met at Hudson, N. Y. Messrs. Mann, Baker and Schlosser were appointed a committee to make an investigation of the management of

the home, and Treaseurer Baker was directed to make a detailed statement of the finances of the institution, to be submitted to the convention of the state association. There has been more or less complaint recently regarding the management of the home and the trustees are determined to correct any evils that can be located.

—The seventh annual convention of the Central New York Firemen's Association was held at Ithaca the first week in August. The selection of officers for next year resulted in the re-election of E. W. Hyatt of Homer, president, and E. J. Peck of Cortland, treasurer. P. L. Lang of Waverly declined a second term as secretary and C. A. Smith of Waverly was elected. A resolution that the Firemen's Home at Hudson should receive no aid from the firemen of the state so long as it remains the property of a private corporation was passed.

—The Vermont State Firemen's Association at the recent Bennington convention, elected the following officers for the ensuing year: President, K. K. Hannum of Rutland; vice-presidents, H. L. Thomas of Winooski, H. T. Hope of Poultney, D. J. Cullion of Bennington, E. E. Gould of Springfield, J. E. Seriven of North Bennington; secretary, E. D. Moore of Bennington; treasurer, L. C. Grant of Burlington; executive committee, C. S. Whittier of Montpelier, F. E. Perkins of Burlington, R. S. Buss and George H. Burch of Bennington, J. H. Donnolly of Vergennes; national representative, L. C. Grant of Burlington; statistician, George H. Burch of Bennington.

## Firemen's Convention Papers.

### Rules and Regulations for Fire Departments in Small Cities.

By James P. Fallon, Fire Marshal, Hammond, Ind.

[Paper read before convention of the National Firemen's Association, Milwaukee, August 17.]

Every department having two or more companies should be under the control of a chief, who should have sole and entire command of the department, and all apparatus belonging to the same, and empowered to direct all measures he may deem proper for the extinguishing of fire. His decision in all matters of dispute between companies should be final. In case of insubordination, disorderly conduct, or gross neglect of duty, he should be empowered to suspend any officer or member and report the same to the commissioners for their subsequent action.

The chief has, by common law, the right to tear down buildings or structures of any kind which, in his opinion, may be necessary to stop the spreading of a fire; also to seize any implement, apparatus or appurtenance which he can bring to his use; but it is well to incorporate in the rule, or have enacted, suitable ordinances to cover the above powers.

He should have power to call out all or any part of his entire department for drills, inspection, parade, or testing apparatus, a reasonable number of times each year to keep them in serviceable order or to enable him to know the efficiency of his men. No alteration in the apparatus should be made without his advice. And his duty should cover the

frequent inspection of the same, with power to order any necessary repairs, without which appurtenances would be unserviceable. Less emergent repairs may, with propriety, be left for authorization by the commission.

He should be required to report annually the condition of the buildings and apparatus belonging to or used by his department, and suggest improvements which will promote its efficiency; also the number, situation, time and cause, together with the loss sustained, of all fires which may occur within his jurisdiction and in minor cities and villages. The duty of acting as fire marshal may, with propriety, be entrusted to him.

A chief should be appointed by a board of fire commissioners, rather than by suffrages of his subordinates.

The foreman or captain should be held responsible for the efficiency and discipline of his command; and, for this reason, rules requiring his subordinates to obey any reasonable order, should be formulated, that he may be enabled to enforce obedience to the rules and regulations of the department. He should be required to make frequent visits to his department building, for the purpose of satisfying himself that the material at his command is in serviceable condition, reporting any damage other than ordinary wear and tear to the chief.

His duty, on arriving at a fire, is to report to the officer in command for instructions; or, in the absence of that officer, to assume command until his arrival. It is an almost universal custom

for the foreman to take charge of the laying of the first line of hose, and directing its pipemen in the performance of their duties; his assistant performing the same function on the second line, should it be necessary to lay the same.

At company meetings, he is the proper presiding officer, unless a president is appointed. The assistant foreman, or lieutenant, should take command and be possessed of the same powers in the absence of his superior company officer.

Firemen should be at least eighteen years of age, and the selection may usually be left to the companies, subject, perhaps, to the approval of the commissioners.

To be able to read and write are requirements which should, except in rare cases, be enforced. Habitual intemperance should be a bar both to entrance and continuance in the fire service.

As to the number that shall form a company, much depends upon the manner that the apparatus is conveyed to fires. In the absence of horses, steamers and ladder trucks require a large force. But as is more common in small communities, hand engines and steamers are discarded, and in their stead hydrant pressure depended upon, thus rendering companies of from fifteen to twenty men sufficient in number.

The internal management of companies may be left to the companies, provided they do not conflict with the rules of the department; the matter of disciplining delinquent members, or department officers, had better be left with the

commission. Conduct unbecoming a fireman, such as refusal to pay legal fines, neglect of duty, intoxication while on duty, or neglect or refusal to obey the authorized order of a superior officer, should subject the offender to censure, reprimand, suspension or discharge, according to the gravity of the offense.

A set of rules and regulations may be adopted from a collaboration of the laws of a number of well known and efficient departments.

#### Scientific Head Protection.

By Willis C. Vajen, Indianapolis.

[Abstract of a paper read before the convention of the International Association of Fire Engineers, Syracuse, N. Y., August 22-25.]

The act of breathing is involuntary and the procedure is not due to an effort on the part of a person, but is the name given to the rushing into the lungs of air which is caused by a vacuum being formed by expansion, and the rushing out of the air by the contraction of same and thus proving the assertion that "Nature abhors a vacuum." It is essential that the air we breathe be of the purest and contain only the ingredients to promote the purification of the blood. Breathing impure air for a time does not



WILLIS C. VAJEN.

always kill, neither does drinking bad whiskey; it depends upon the constitution of a person, but every little bit hurts and means the shortening of the life of that person who indulges just so much.

Exhalation is the outward rush of the air which has been depleted of its health giving properties and now contains the poisonous substances for which they were substituted, and should not be used again by a human being until thoroughly assimilated with the oxygen and hydrogen of the natural atmosphere, which contains about 1-5 of the former and 4-5 of the latter. The walls of the air cells of the lungs and of the capillaries surrounding them, are so very thin that the interchange of gases readily takes place. It is here that the purification or change from venous to arterial blood occurs.

The lungs during life are never entirely collapsed, this being prevented by about 100 cubic inches of air which cannot be expelled, and is called "residual air." Another 100 cubic inches of air, known as "reserve air" usually remains in the lungs after expiration, and is used by these organs during any increased physical exertion as running, climbing, etc., which requires an extra amount of air. The

"tidal air" represents the amount of air taken into the lungs at each ordinary inspiration, and consists of 30 cubic inches. During violent exercise, however, an additional 100 cubic inches of air is taken into the lungs at each inspiration and is known as "complimentary" air. The extreme capacity of the lungs would, consequently, be the sum of the residual (100), reserve (100), tidal (30) and complimentary (100) volumes of air, amounting to 330 cubic inches. The "vital capacity or respiratory capacity," however, is the amount which can be breathed out after the deepest possible inspiration, which would be 230 cubic inches.

It is a foregone conclusion that a person to be able to tote about with him fresh air for breathing, must do so in a compressed form and it has been satisfactorily proven that an able bodied man requires an amount equal to about 330 cubic feet in twenty-four hours or about fifteen feet in one hour; it is immaterial whether it is compressed or not.

As everything is affected, more or less, by heat, compressed air is no exception, and hot air is not conducive to the proper results while breathing it, but a simple experiment with the mouth will demonstrate how this difficulty can be easily overcome. When you pucker up your lips and blow, you will note that the air emanating therefrom is much cooler than when the lips are permitted to assume a natural position and from whence the air comes almost as warm as the blood. The same effect is reached when compressed air is liberated through an aperture consistent with the flow desired and its temperature is dependent upon the size of the opening and the pressure behind it. So that even should the air become heated, in being released it would become sufficiently cooled to cause no inconvenience.

We therefore proceed to the consideration of the watery vapor with which exhaled air is saturated, its composition being of this and carbonic acid gas. The usual amount of this fluid exhaled in twenty-four hours ranges from seven to eleven ounces. It is not pure water, but holds in solution a considerable amount of carbonic acid gas. Of course all poisonous gases of the exhalation will escape, as well as the unused and superfluous excess of fresh air, by being forced out and away from the person protected, by the constant and regular flow of the latter which has been compressed and is now liberated under control. But provision must be made for the disposition of the moisture referred to, and which is the heavier, by the absorption of it with the presence of some agent, chemically treated, and possessing that power. If this were not dispensed with, it would congeal on any surface of another description and the accumulation would trickle down one's cuticle and prove very annoying by creating a tickling sensation. This moisture, which is held by a material which must act as a blotting pad to ink, separating it from gases, would effect the fresh pure air in such a manner as to make it even more acceptable to breathe and also increase its capacity to sustain.

It would be impossible to construct a protection which would be entirely air tight and at the same time observe the paramount requisite of lightness of weight, so the object must then be to exclude the surrounding atmosphere with its death dealing proclivities in some other way and prohibit an unrestrained ingress, by selecting an article that by its nature is so impervious as to bar it

and will adjust itself snugly, being a self-regulator, aided by the architecture of the whole, to the angles and curves of the body to which it must be closely and hastily fastened, that no suction could be formed by extraordinary exertion of the muscles to disturb the existing action. This, with the pressure from the inside to which we have directed your notice, precludes any possibility of foreign interference with the comfort which prevails, and assists the purpose of forcing the barrenness from within as rapidly as it is produced.

This paper treats of the subject of head protection, but an attempt is made to clearly define all of the principles involved therein, as pertains to the senses effected and reached through the exposure of that very essential adjunct to the anatomy.

It has been considered advisable, as a means of demonstrating more clearly to you the theories upon which this practice is based, to do so by means of a model which comprises all of the combativeness which we believe to be necessary when in the presence of the elements which destroy, each part of which is based upon scientific principles.

All firemen have well known for years about the remarkable resisting power and strength of the upright pieces running crosswise on the top of the ordinary hats which have been worn for many decades, called cones, and many a fireman, through their effectiveness, has been enabled to withstand a severe shock and tell the folks afterwards just how it happened, how the debris fell and "never touched me," so it will not be necessary to longer dwell upon a subject with which you are all so familiar, except refer to the fact that it is essential that they be made of some fireproof material, otherwise should the aforesaid debris be on fire this appendage would not contribute much in defence.

Our next peep into the realms of science is to see through her unyielding portals, sufficient light on our subject to enable us to protect the hearing, that is, to accomplish our object without depriving the organ used therefor from exercising this function naturally while safely ensconced with its sympathetic co-workers.

Sound is not made until the sound wave reaches the delicate mechanism of the inner ear. These waves are caused by two bodies coming in contact, thereby disturbing the air in the immediate vicinity, resulting in what is called a sound wave which travels through space until exhausted unless arrested by something impervious to it, in this event it is repelled and forms an echo by re-tracing its flight.

It is then the purpose to provide for something which will permit of the sound wave reaching the ear by passing through whatever protection we have given to it. The principle upon which sound is based is vibration and this property must be apparent in order to convey the wave to the ear.

We now knock at the door in the interest of vision or sight. The first thing that would naturally occur to the searcher for information on this subject, would be to betake himself in pursuit of something which is transparent. But there is nothing transparent which will not have an inclination to more or less submit to atmospheric conditions. So the least susceptible material should be chosen and even then it should be of two thicknesses, to reduce to a minimum this possibility and then should this minimum



exist, means should be provided to eradicate from the surface any moisture which might congeal thereon, or other agent which would obstruct the use of the eyes without restraint. It is necessary also that it should possess toughness and elasticity to withstand the effects of an explosion which might occur during conflagrations.

The *modus operandi* of the sound wave has been mentioned, but only as it applies to the vibrations when not confined. On the other hand, when the space is limited and the vibrations are produced from within, the effects therefrom are apparent only indistinctly, and an arrangement by which the protected can communicate with the outside is simply by some code of signals given by an instrument, the call, which does not consume any of the life sustaining properties.

The best method of entering and combating smoke in the locating and fighting of fires can only be followed effectually by adopting reliable means affording perfect protection to the head of the wearer, which can be quickly adjusted and in which he can place explicit confidence. Such an article in the hands of an active fireman is rendered most valuable, equal to that of a steam engine or chemical extinguisher, when used and handled to advantage.

On the arrival at a fire the proper course to pursue, in our opinion, is to confine the draft and search for the seat of the conflagration, properly equipped with a reliable head protector. The same will apply to the rescue of the lives of the panic stricken inmates of burning hotels and other large buildings. A single fireman with the proper head protection could direct and rescue many lives by leading them to a place of safety, which many times might be close by and unknown to those who are in danger.

The chief of a fire brigade should see that his department is equipped with the most modern appliances which will best insure the safety of his men when battling with fire. The position of fire chief should be taken where he can best observe the surroundings, and where he can, with his men well provided with the most reliable protectors for their persons, order them to penetrate the most dense smoke and not hesitate on account of a feeling of fear for their safety. No fireman is justified himself in entering a dense smoke unprotected and it is undoubtedly a crime to order another to enter the deadly fumes attending a fire without the protection from the elements which will, sooner or later, cause much pain and suffering and finally result in premature death.

When I was only ten years of age, while talking to the fire boys at the engine house in our neighborhood, Chief Joe Davis came in and spoke of a recent fire which they had had and which was a total loss. Chief Davis remarked that it was the smoke that bothered them, otherwise they could have succeeded in saving the building. He remarked that anyone who would invent a covering for the head to protect a fireman from the smoke would make a fortune. I was so greatly impressed with the remarks of the chief, that the subject of head protection, associated with a fortune, has from that date occupied my mind.

When the new base burner stoves were introduced, the mica plates around their sides suggested that mineral to me as the proper thing for the eye pieces, and through which a fireman could see and there would be no danger of breaking.

When the possibility of a telephone was first agitated in the scientific papers, I proceeded to construct one which connected the front and back office in my place of business, which was a hardware store 195 feet long, and while experimenting with sounding disks, a diaphragm suitable for the use in the head covering presented itself to me.

While at college, my experience while working in the laboratory taught me that pure air was what nature demanded and for which there could be no substitute. It was evident that the air would have to be compressed and carried in a receptacle, which would not be too large and burdensome when attached to the head covering. The first reservoir, which was about the size of a nail keg, has been reduced to its present dimensions and now furnishes a bountiful supply of air to the wearer. A greater obstacle with which we were confronted was how best to regulate this flow of air, as an over-supply of air we found to be equally as unsatisfactory and dangerous as not enough. To construct the head covering so as to be self-regulating was a most difficult problem. After many tests and experiments we discovered that a collar constructed of lamb's wool would allow the excess amount of air to pass down through it without in any way causing an opening by which any movement of the body might create a suction from the outside and admit smoke or gases. The air pressure from the inside, being the greatest, prevents the elements on the outside to enter.

The next serious problem to solve was how to best dispose of the moisture which would accumulate on the inside of the head covering. The moisture referred to is the vapor from the breath. After trying in many ways to dispose of this accumulated moisture, our efforts were crowned with success in finding a certain porous leather, which by proper chemical treatment, absorbs the moisture and at the same time diffuses a moist vapor which rarifies the inside air and renders it most pure and pleasing to the wearer.

#### Inspection of Fire Risks.

By W. S. Henry, Chief Fire Department, Jefferson, Wis.

[Paper read before the convention of the National Firemen's Association, Milwaukee, Wis., August 17.]

There is, in my opinion, no chance for argument as to the great good to be secured by having each risk of every class carefully inspected by the representatives of insurance companies, provided that the recommendations and suggestions made for its betterment by these competent men should be carried out.

When an insurance company sends an inspector into the field, he is instructed to go over the business and inspect each risk at each agency, and make such recommendations to the company, or to the local agent direct, that may seem to be for the best interests of the company; and, in doing this, he has faithfully performed all that the conditions will allow.

No rights are given to these men to correct or force a change in the premises of any particular risk. I am told by insurance men, who have been in the business for a number of years as adjusters and inspectors, that even with the exact circumstances of any certain fire properly presented to the unharmed manufacturer or merchant, it is a rare thing to see changes in his plant to correct these evils.

There must, in my judgment, be some sort of an alliance formed between the fire department chiefs, or those in authority, and the inspectors or adjusters of the insurance companies, so that the careful investigation or rigid inspection can be brought to some use by forcing correction of the evils.

In the state of Massachusetts, the state fire marshal law, under the able management of Col. Whitcom, has been of great value to that commonwealth, and from statistics prepared, which can be secured upon application to that department, it will be seen that the material decrease of the fire waste of that state can be attributed directly to the co-operation of the interests, namely, the authorities and the insurance companies.

The number of fires must, of necessity, be decreased if the corrections asked by the inspectors of insurance companies could be forced and carried into effect. There is little room for the companies to insist, because of the strong competition in their business.

In the investigation as to causes of fires, it should be the duty of every chief to make an investigation of each loss, and keep a record of his findings, and, where he is satisfied that the cause can be traced directly to some particular hazard, the department should be sure to give the benefit of these investigations to the representatives of the insurance companies, for their assistance in correcting the evil at some other point or in some particular class of risk.

I do not believe it possible for the insurance companies, or their representatives, to, single-handed, change the conditions or reduce the number of fires unless they can have some support from the individuals interested.

I was told of a case where an inspector had asked a certain manufacturer within this state to cut away the wood-work which appeared close to the metal stack through the roof of his plant. Some discussion between the inspector and the assured took place, and the result of this conference was that the assured did not believe it possible for a fire to occur because of the close proximity of the metal stack to the roof timbers; and he felt so certain of it that he was perfectly willing to have the company make an endorsement upon his policies that no claim would be made against the company for fire which might be caused by the aforesaid defect. In order to make an example, the inspector had this endorsement placed upon the policy, through the local agent, and, much to the satisfaction and gratification of the insurance company's representatives, within a few weeks the manufacturer was compelled to stand a loss of about \$150 to his plant, and came very near losing his entire property. This man to-day is much wiser, and of course is a very strong advocate of the inspection department of the insurance companies. Any recommendation that is made to him is carried out to the letter.

Of course the department chiefs are willing that the old story of the two horses should be applied to this matter, namely, so far as the inspection is concerned, the chief of the department shall be the one willing horse, and the companies' representatives the other horse to do all the work.

Of course we, as representatives of the departments, are willing that they should have a certain amount of the glory, although we would like to come in for a part of the feed and grain, which, in our position, would be most of the

glory, in having these things corrected and forcing the improvement of risks and the fixing of certain bad points reported by the insurance companies.

This is a matter which should receive a careful investigation of the fire department chiefs, and it is, in my opinion, a wise thing that the matter should be so thoroughly looked into, that it might be possible to secure the passage of the fire marshal law through the legislature, at its next session.

I do believe that the number of fires would be decreased if a more rigid inspection of risks was made and the causes for same thoroughly investigated, provided that the insurance companies could have the support of the people. In the matter of protection the people are themselves much more interested in having their property carefully looked over and put in shape than the companies can be, because the loss must of necessity fall upon the insured, as it is their premium that pays the losses.

#### Storage Battery in Fire Alarm System.

By Morris W. Mead, Supt. Bureau of Electricity, Pittsburg, Pa.

[Paper read before the convention of the International Association of Fire Engineers, Syracuse, N. Y., August 22-25.]

I have been requested by your honorable committee to prepare for your convention a paper setting forth the benefits and advantages to be derived from the use of the storage battery in fire alarm systems. I desire to present what I shall say in a short and concise manner and in plain practical English, and not cloud the paper with any technical phraseology.

As has been the history of so many of our more valuable inventions, the storage battery passed through many years of ups and downs, trials and vicissitudes, at times inspiring confidence only to prove it misplaced, until finally it



MORRIS W. MEAD.

immersed the success we find to-day. The experimental stage has passed and the general and constantly growing use of electricity for light and power has made the use of the storage battery not only practicable, but advantageous for many purposes and in no other field more so than in the fire alarm, and has made it possible for all municipalities to have a battery and battery room which is neat and compact, clean and economical and efficient to a degree which has never been known in the history of the gravity battery.

The superiority of the storage over the gravity, or any other form of primary

battery, for municipal signal telegraphs has been fully demonstrated during the past few years, as is evidenced by the fact that whereas no longer than five years ago, there were practically no fire alarm systems deriving their power from the storage battery, to-day we find these systems numbering up in the hundreds, with daily acquisitions. Among the cities thus furnished may be mentioned Buffalo, Washington, Baltimore, Pittsburg, Portland, Detroit, Providence, Allegheny, Troy, Wilmington, Elmira, Jersey City, St. Paul, Atlanta, Los Angeles, Houston and many others; among these few names no less than twelve states are represented.

In no other distinctive branch probably has more progress been made. Among the many increased benefits derived from the use of the storage battery, as compared with the gravity or other primary cell, we find the most important to be that of its economy of maintenance. We are all familiar with the annual outlay made for zinc, copper and bluestone, and also at what expense only indifferent results are obtained from the use of these materials as a generating power. Against this, we have the storage battery with its cost of maintenance at about one-third that of the primary battery, and a current supply which is always constant, uniform and efficient.

In fact I am aware of a number of places where the electric light or power companies make no charge whatever for the current supplied for the purpose of charging the storage batteries, the quantity of current necessary for this purpose being so small as to be hardly sufficient to fully illuminate one 16 candle power incandescent lamp. In my own city of Pittsburg, where we have had the storage battery in operation for several years with great success, the charging current is derived from the dynamos in the public safety building and it is therefore with no additional expense to the city that the storage batteries are thus supplied. This specific advantage of economy alone would be sufficient to attract the serious consideration of interested persons, but there are many other benefits almost as great and which I will briefly mention.

The space occupied by the storage cell as used in fire telegraph work is about one-third that required by the gravity cell, an item of no small importance with a constantly growing city and the consequent requirements for the extension and enlargement of the municipal signal systems.

There is no formation or creeping of salts, with the consequent filth and dirt almost inseparable to the gravity battery. As the elements of the storage cells are not consumed, there is not the disagreeable cleaning and renewing incidental to the use of the gravity battery.

The electro-motive force and internal resistance are practically constant, which condition can never exist in a gravity or other primary battery where the consumption of material is necessary to the generation of current. The discharge of current is regular and uniform, a feature most essential to the proper maintenance of adjustments and to the perfect working of a fire alarm system.

In order to further increase the value and efficiency of the storage battery system and to secure the best possible results, there has been designed and perfected what is known as a storage battery controlling board which is especial-

ly adapted to the use of the storage battery for fire telegraph service. The city of Pittsburg has three of these controlling boards in operation in connection with its fire alarm system. These boards are of slate and are adapted to the use for charging purposes of any direct current from 110 to 500 volts.

The simple throwing of a switch on the back of the boards, placing the boards and all the instruments thereon in condition to use any current within the scope of the potential mentioned. The controlling boards are automatic in their action and contains the necessary ammeters and voltmeters for reading, charging and discharging currents, fuses for protecting all instruments, switched for reducing the charging current, to the proper strength, switch for properly balancing up the resistance of the various working circuits, that the rate of discharge over each circuit may be uniform, and the necessary gang switches, by means of which, by a single movement, batteries may be thrown from charge to discharge and vice versa at pleasure.

I do not believe in too radical a departure from the gravity battery, (such as a direct dynamo connection would be) where such a light current is used as in fire alarm and police telegraph work, a current not unusually stronger than one-tenth of an ampere.

The next suggestion in the progressive step was, what would surpass in convenience, economy and general benefits the old style of battery, and not cause too radical or unsafe a departure from preconceived methods? The application of the fire alarm, and your work incident thereto, is altogether emergency work, thus really a case of beating nature with science. So this step forward above referred to, to be of value, must have advantages superior to that previously in use, and not dangerous in its tendency. Hence, I have endeavored briefly to acquaint you with some of the advantages and benefits of the storage battery, as I have found them demonstrated by practical experience, and have no doubt there are many who can verify these results, which in substance are, we have a battery which is economical and requires but little attention, it occupies but one-third the space necessary for the old gravity battery, it is much more reliable, it is far cleaner and it is absolutely steady in its delivery of current. Through the means of the instruments mounted upon the controlling boards, you have before you at all times the exact condition of each set of battery. You know exactly at what rate of current your cells are charging; you know what rate of current is being discharged upon the signal circuits; the resistance on all your lines is evenly balanced; in fact you practically have the condition of your whole system immediately before you and can tell at a glance whether the relation between your battery and your circuits is what it should be, a proper adjustment between the two being absolutely essential to good service.

#### City Engineer's Meeting.

The annual convention of the American Society of Municipal Improvements, which is composed almost entirely of city engineers, will be held at Toronto, Canada, October 3, 4 and 5. Many valuable papers on municipal subjects will be read and discussed. D. L. Fulton, of Allegheny, Pa., is secretary of the society.



**Mayor Harrison on Misgovernment.**

In a special article published by the "Saturday Evening Post," of Philadelphia, Mayor Carter H. Harrison of Chicago, writes:

I confess then, after more than two years' management of the affairs of the most rapidly growing municipality in this country, I fear for the character of future municipal government if education of the masses does not progress more rapidly than it has.

Legislatures will not be honest in the face of public apathy; governors will not touch the public pulse if its beat is indistinct; mayors will not respect public criticism if it is confined merely to the mouthings of parading "reform" organizations, too often devised to conceal the wolf's head under the skin of the lamb.

But within the last two years the Legislature of Illinois passed for the city of Chicago a municipal traction company law so base in its purposes, so wanton a betrayal of popular rights, that the corporations which were to benefit by it were never able to secure its enforcement. The public conscience was educated by the corruption which attended the passage of the law, and raised so great a clamor that both of the great party organizations of the state were compelled to secure its repeal. Yet there was never a moment when that law could have been enacted if the voter took the same interest in his legislation that he does in his daily bread, and I take it that it will be very difficult for him to secure his daily bread if his legislation is not right.

Municipal government of to-day starts, unquestionably, in the Legislature. The corrupt legislation is passed and is transmitted to a Common Council of the city chosen by much the same methods which prevail in the election of legislators. The combination of a biased and corrupt legislature with a corrupt Common Council, or, to be charitable, we will say a council of low intelligence, offers to the corporations and to the illy disposed private capitalist favorable ground upon which to sow the seed of bribery. The bribe-giver, always more dangerous than the bribe-taker, has an opportunity created for him by the very people (the voters or citizens themselves) who are to be betrayed.

The bribery of a legislator, an alderman, a governor or a mayor, seems to this greed but a trifle compared with the immediate material profits to be had. The corporation consenting to this bribery is organized, possesses the first legal talent, understands every crook and quirk of good and bad laws, has a firm hand upon the political machinery of first this party and then that party, keeps chosen manipulators of primaries, leaders of caucuses, orators for conventions, employees in the public service, is prepared for every emergency. Why should not the people pursue the same tactics, since they have so much more at stake? It is said that the fifty-year street railway franchise recently defeated in the Common Council of Chicago would have been immediately worth to the corporations interested in it, had it passed, \$30,000,000. But to the people of Chicago its defeat was worth, if figures can be used for illustration, \$100,000,000. And the instant they displayed the vigilance that a private capitalist would in looking after a \$100,000,000 investment they won. Their defeat was an impossibility.

If the taxpayers manifested as much concern in the moral character of their rulers as the corporations do, it would be next to impossible to corrupt men who hold office. The scrutiny of the character of men seeking office cannot be too close, for often a man who is honest in private

life will not be honest in public life, just as the man who would not commit burglary nor highway robbery justifies an act of his which takes from a corporation something lawfully belonging to it. I am free to say, though, that the corporations themselves are responsible for the existence of such a spirit. Had them from the start been one-half as honest and sincere as the common people strive to be, a more liberal spirit toward them would exist in every section of this country. They have been sowers of discord, dissension and dishonesty in too many instances for the people to easily forgive, as their eyes are opened.

Underpaid municipal officers are often led into dishonesty where the temptation would not have come if they were well paid. A corporation pays its chief counsel who manipulates its legislation through councils and other bodies, \$25,000 a year. A municipality, with far greater interests, having far greater wealth, pays its counsel, who is to be a guide and a protector, one-third or one-fifth of that sum, and expects him to profit on it. Again, terms of office are, as a rule, so short that the successful candidate, unless of more than ordinary moral calibre, feels that it is an impossibility for him to master the details of his official work during the period of his term, and that therefore he should bend his energies to making all of the money he can out of his position in order to recompense him for his loss of private business during the time he is removed from it on account of the office.

He is morally wrong in taking this attitude, but that does not change the fact that he does. Were his term of office four, six or even eight years, his salary a just one, and it an impossibility for him to stand for re-election until he had been out of office at least one term, the bad feature of using his office for re-election, the insecurity of his present position, the necessity of always considering his financial condition, would be removed, and he would be a stronger, more capable and far more honest official. It is an immoral proposition to ask the ordinary man to care faithfully for millions of public money and property on a two-year term of office, and a pittance salary.

The problem of honest municipal government is as simple as A B C, when those who formed the foundation of that government refuse to act until they see. Let the taxpayer take as deep an interest in the life and acts of his rulers as the corporation does, or the private individual with an ax to grind, and all the power of gold can not keep officials from being honest to the people, their oaths, and their God.

**New Gas Schedule at Denver.**

The gas and electric companies of Denver, Col., have inaugurated a new existence as the Denver Gas and Electric Company with Mr. Emerson McMillin as chairman of the board of directors. The new company has revised the schedule of rates for gas, which for illuminating purposes, under the old company, was \$1.50 net; but there were a great many concerns in town, large consumers, and almost all of the churches and saloons and places of public amusement, which got gas at the special rate of \$1.25. Under the new company, all these special rates are cut off and the gross price is \$1.50 and the net price, \$1.35. Under this arrangement, by getting ten cents more a thousand from the many big concerns

who got the special rate, the new company will get just about as much for its illuminating gas, but many small consumers will get gas at fifteen cents a thousand less. Under the old company fuel gas was \$1.25 gross and \$1 net; under the new company it is \$1.15 gross and \$1 net.

**Lighting Project at Seattle.**

At a recent meeting of the Seattle, Wash., council the following resolution was adopted

Be it resolved by the city council of the city of Seattle, That the board of public works be and hereby is authorized and directed, at its earliest convenience, to report to the city council the probable cost and expense of installing a light plant or plants, as the case may be, in connection with the Cedar river water supply system sufficient to furnish all the light needed for properly illuminating the streets, avenues, parks and public places of the city of Seattle; that it be directed to accompany said report with recommendations as to the places or streets at or upon which said plants should be constructed, and with an estimate as to the probable cost of operating the same.

Seattle will have several million gallons of surplus water daily when the Cedar River system is completed. As this water will be delivered to the city at a strong pressure, some of the aldermen think it can be utilized advantageously for the generation of electric power.

—Northville, Mich., will invest \$27,500 in a municipal electric light plant.

—Greensboro, N. C., on July 18, voted to issue \$25,000 of bonds for the construction of a municipal electric light plant.

—The council of Big Timber, Mont., have granted a 30-year franchise for electric light and power works to C. T. Busha and E. O. Clark.

—A resolution to issue \$150,000 of bonds for the construction of a municipal electric plant has been introduced in the Milwaukee, Wis., council. Ald. Henry Smith is the sponsor.

—The streets of Augusta, Ga., are lighted with 336 arc electric lamps of 2,000 c. p., burning all and every night. They are furnished under a five-year contract at \$70 per lamp per year.

—The street lighting at Fall River, Mass., is done by 634 arc electric lamps of 2,000 c. p., burning on the all-night schedule. The contract price is 36 cents per lamp per night, with a reduction of one-half cent whenever an extra hundred lamps are added to the number of 503.

# WATER DEPARTMENTS.

## New England Water Works Association.

The nineteenth annual convention of the New England Water Works Association, which will be held in Syracuse, N. Y., Sept. 13 to 15, inclusive, promises to be an event of unusual interest to the citizens of Syracuse, as it will bring to their midst not only the most prominent water works men of the New England states, but some who have made a national reputation. It will also be a source of congratulation to the members of the association, as they will be permitted to view the finest water works plant in the United States, if not in the world, and to enjoy a delightful trip to Skaneateles Lake, the source of supply, where a sail of thirty miles will be had on a sheet of water scarcely rivaled in our fair land.

The following is the program prepared for the convention of the New England Water Works Association: Address of welcome, by Mayor James K. McGuire; address by W. R. Hill, describing the method of removing vegetable organisms from the distributing reservoir; a drive through the city and to the distributing reservoir; an exhibition by the fire department; a trip to Skaneateles Lake and sail to Glen Haven and return; entertainment of the ladies at the Kanatenah Club and trolley ride and banquet at the Yates.

Through the efforts of Superintendent W. R. Hill the constitution of the association was changed so as to allow it to meet outside of the New England states.

## Detroit's Low Water Rates.

The annual report of the Detroit, Mich., board of water commissioners, is a very interesting volume because it sets forth in detail the facts relating to the management of one of the most successful water plants in the country. In opening the report the commissioners say:

The reduction of one-half in the water rates, taking effect January 1st, 1898, was considered somewhat of an experiment; but it is believed that with careful management the rates as now fixed, which are the lowest, so far as known, in any city in the world, may be permanently maintained.

The rates are:

METER RATES.		Monthly.
First 15,000 gals.....	5 cts. per M.	
All over 15,000 gals.....	1 1/4 " "	
Minimum rate .....		75 cts.
Payable Quarterly.		
ASSESSMENT RATES.		
From January 1st, 1898.		Per Annum.
For family, household purposes .....	\$	2 00
Additional families to first, in same house supplied with one faucet, each.....		2 00
Green houses—Special rates.		
Private stable, for each horse .....		1 00
Livery stables, for each horse .....		1 00
Dray and team horses, each.		50
Cows, each .....		50
Stores and offices, from.....	1 25 to 12 00	
Bakeries, average daily use for each barrel of flour....		2 00
Saloons, groceries and provision stores, from.....	2 00 to 50 00	
Bar, with faucet, from.....	6 00 to 50 00	
Fish houses .....	6 00 to 50 00	
Slaughter houses—Special rates.		
Hotels and taverns, in addition to family rate, each room .....		50

Boarding schools, from.....	3 00 to 50 00
Building purposes, each 1 M brick .....	02
Building purposes, each 100 yards plastering.....	05
Building purposes, each perch stone .....	00 1/2
Building purposes, each minimum .....	50
Printing offices—Special rates.	
Butcher stalls, each not less than .....	2 00
Workshops, for 10 persons or under .....	2 00
Workshops, for each additional 10 persons.....	1 00
Estimated quantities of water each 1,000 gallons....	05
Boarding houses, in addition to family rate, each boarder or roomer.....	60
FIXTURES.	
Bath tub, for families, first tub .....	1 00
Bath tub, each additional tub .....	60
Bath tub, public, each tub...	4 00
Automatic water closets, for family, first closet.....	1 60
Automatic water closets, each additional .....	60
Automatic water closets, for hotels, stores, factories, etc., for 10 persons..	2 00
Automatic water closets, each additional person.....	20
Rod water closets, not less than .....	6 00
Urinals, not less than.....	2 00
Wash hand basins, for family .....	50 cts. 2 00
Wash hand basins, for other purposes, each person .....	15
Hose, premises 30 feet front or less .....	60
Hose, 30 feet to 60 feet.....	80
Hose, 60 feet to 100 feet.....	1 60
Special rates for larger grounds.	
Fountains .....	5 00 to 20 00
Street sprinklers, each wagon .....	50 00

Where there is a waste of water a proper increase of rates will be made.

The total receipts for the year amounted to \$387,165.21, of which \$236,743.13 came from water rates, \$73,909.26 from tax levy and the balance from miscellaneous sources. The total expenditures were \$348,476.15, of which \$118,861.66 went for construction, \$79,823.87 for operation, \$16,916.53 for maintenance, \$69,520 for interest, and the balance for other purposes. The estimated value of the works is \$6,030,963.29, and the bonded debt \$1,033,000.

The following table shows the gallons of water pumped each year from 1887 and the cost per person:

In 1890 the average family rate was \$9.36; in 1898 it was \$4.20. There have been seven reductions in the rates since 1890, and tables published in the report show that the water consumers have saved, by these reductions, the sum of \$777,720 during the eight years.

The following table may be studied with profit by all water works officials:

YEARS.	Population. Supplied.	Gallons Pumped.	Cost of Pumping.	Cost per Person.
1887 .....	177,258	13,168,859,808	\$57,352 00	32 1-8 cts.
1888 .....	189,475	14,380,166,670	60,284 11	31 4-5 cts.
1889 .....	201,272	12,875,334,453	61,560 48	30 1-2 cts.
1890 .....	213,140	12,120,944,532	54,433 49	25 1-2 cts.
1891 .....	225,815	12,057,261,236	53,012 77	23 4-9 cts.
1892 .....	238,496	12,276,612,482	53,287 39	22 1-3 cts.
1893 .....	256,059	13,877,977,208	46,546 01	18 1-7 cts.
1894 .....	256,547	13,649,779,605	48,146 11	18 3-4 cts.
1895 .....	264,329	14,698,451,954	51,772 07	19 3-5 cts.
1896 .....	277,256	13,254,369,371	53,234 42	19 1-5 cts.
1897 .....	282,417	12,928,821,326	38,123 99	13 1-2 cts.
1898 .....	289,593	14,278,682,058	38,567 52	13 1-3 cts.

Daily average consumption in gallons.	
1898.	39,092,252
1897.	35,421,430
1896.	36,313,340
1895.	39,397,716
1894.	36,079,068
1893.	36,079,068
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### Interesting Facts About Meters.

Superintendent William R. Hill, of the Syracuse water works, has made some interesting comparisons concerning the classified use of meters. To a representative of "City Government" he said:

"During the year there have been an average of 5,462 meters on domestic services, supplying 53,500 people with an average of 753,000 gallons per day, making a consumption of 14 gallons per capita per day. All demands in the city for water for commercial purposes and for power to operate elevators are supplied, and there are meters on all such services, which show that the average consumption for commercial purposes has been 2,952,000 gallons per day, making a consumption of 23.2 gallons per capita per day for commercial purposes. The average consumption for power to operate elevators has been 903,000 gallons per day, making a consumption of 7.2 gallons per capita per day for power purposes. Thus the consumption for domestic purposes (as far as metered), for commercial purposes and for power to operate elevators has been 44.4 gallons per capita per day. This is the actual use of water as indicated by the meters. It does not include the water used for municipal purposes. I wish to call to your notice the fact that there has been an average of 93 elevators operated by water power and that they have been using enough water to supply for domestic purposes 64,500 people using 14 gallons per capita per day."

### Meters to Reduce Water Rates.

New rules providing for a reduction in rates for metered water have been adopted by the Albany, N. Y., water board and will go into effect on September 1. Under the new rules the owner or agent of any premises may have a meter put in on request, and "the regular water rent on each building whose entire water supply is metered is to be made one-third less than the present schedule of water rents." To illustrate just how the reduction of one-third in the rate is to be made, Superintendent Bailey cited to a "City Government" representative the following case:

For example, a person now paying the regular rate of \$12, \$2 for an extra closet and \$5 for a hose, a total of \$19, would get \$4 off the regular rate and no charge for specials, if he put in a meter. This would make the cost \$8 per year instead of \$19.

The \$8 rate gives the consumer use of 100,000 gallons of water a year without any extra payments, which is equal to 280 gallons or nine barrels per day.

If more than 100,000 gallons is used, the excess is charged at the rate of eight cents per 1,000 gallons, or about one-quarter cent per barrel.

Those wishing to take advantage of this reduction must do so before October 1, 1899, at which time the books of water taxes are prepared for the year 1900.

### Meters at Atlantic City.

The third annual report of the board of water commissioners of Atlantic City, N. J., says: "The results of the meter system are very satisfactory to the consumer as well as to the department, as is evidenced by the universal application for meters for new services. The saving due to this system is shown in the reduced pumpage and consequent reduction in fuel consumption. The amount of water pumped in December, 1897, is less than for any month since April, 1890, notwithstanding the fact that the population of the city has increased 70 per cent. since that time. It is probable that a point of minimum pumpage has been reached, or

will be soon, and that a steady increase may be expected in the future. This for two reasons—first, because of the very rapid growth of the city; and, second, because the consumers who practiced a rigid economy in the use of water when the meters were first set, have learned that this is unnecessary, as the minimum rate entitles them to an abundance of water for all legitimate purposes, and they are consequently using more water than formerly."

### Testing Plant for Large Meters.

On Wednesday, July 19, a large number of water works officials, newspaper men and other interested parties witnessed the operation of the testing plant for large meters recently constructed by the National Meter Company at their works in Brooklyn. On the day of the inspection one of the 36-inch meters made for the Jersey City water department was under test and was found to be accurate. The testing apparatus consists of a pump with a capacity of 50,000,000 gallons per day when driven by an engine of suitable power. It is at present operated by a thirty horse power Nash gas engine, and has a capacity of 12,000,000 gallons per day. The water is lifted only a few feet high into a stand-pipe, from which it flows through the meter and into a brick conduit twelve feet wide and over six feet deep. In this conduit is placed a weir eight feet long, over which the water flows into another conduit which leads back to the pump. The water is thus pumped continuously around through the meter and over the weir. Suitable gauges are provided for reading the head of water as it passes over the weir, and from these readings the quantity of water flowing over the weir is determined.

### Albany Filter Plant Started.

The first water from the new filter beds at Albany, N. Y., was supplied to the public on Friday morning, July 28. Since that date 10,000,000 gallons of filtered water daily has been pumped into the distributing mains. When the plant is completed it will furnish a daily supply of 15,000,000 gallons.

Thus far, the operation of the filter beds and the pumping of the pure water has been in the experimental stage and is regarded merely as a series of tests and not as final and regular working. Much remains to be done to perfect the system, which will not be in complete running order until everything is finished and satisfactory tests and adjustments made.

All these preliminaries, the testing of the beds, the starting of the pumps and adjusting the capacity and supply, have been under the direction and supervision of Chief Engineer Allen Hazen, upon whom depends the final acceptance of the plant by the water board.

### Los Angeles May Buy Water Plant.

The question of the city acquiring the ownership of the water works, which has been agitated for months at Los Angeles, Cal., will be settled at an election to be held Aug. 23. The people will vote on a proposition to issue \$2,090,000 in bonds, the proceeds to be used for buying the works and making improvements there-to. It is proposed to pay for the works of the private company the sum settled upon by arbitration, \$1,183,591. The balance of the money from the bonds, if issued, will be spent for a filtration plant, new mains, reservoirs, etc.

### Water Department Items.

—The water works at Plymouth, Mass., will be improved at an expense of \$30,000.

—The council of Kaukauna, Wis., have voted to purchase the plant of the private water company for \$75,000.

—W. D. Lovell of Des Moines, Ia., has been awarded the contract for building the new water plant at Sibley, Ia. His bid was \$16,261.

### Decision on Gas Company Agreements.

An important decision bearing on agreements between gas companies to settle competition has been rendered by the Supreme Court of Indiana in the case of the State vs. Portland Natural Gas and Oil Company. In this action the state, on relation of a prosecuting attorney, attempts to dissolve the corporate franchises of the defendant on the ground that it has entered into an agreement with another gas company in the same town "to fix the rate of gas to be charged by them and each of them to the consumers" and to refuse to serve gas to any customer of each other. A demurrer to the information was set up by defendant and sustained by the Circuit Court. Then the case was appealed by the prosecuting attorney and the decision of the lower court sustaining the demurrer has been reversed by the Supreme Court. The opinion of the Supreme Court is quoted, in part, below:

It will not be unreasonable to presume that one of the objects, upon the part of the city of Portland, in granting permission to the Citizens' Gas Company to lay its pipes and mains along and under the streets of that city, after it had awarded the same rights to appellee, was that there might be a reasonable and fair competition between these two companies. By the agreement in question, when carried into effect, the patrons of one company were excluded from being supplied with gas from the other company. Each company was, by the terms of the agreement, bound to abide by and maintain the prices fixed and each was prohibited from furnishing gas to the customers of the other. That the people of that city who desired to become consumers of gas were, by the agreement in question, deprived of the benefits that might result to them from competition between the two companies, certainly cannot be successfully denied. The exclusion of competition, under the agreement, redounded solely to the benefits of appellee and the other company, and the enforcement of the compact between them could be nothing less than detrimental to the public. By uniting in this agreement, appellee disabled, or at least professed to have disabled, itself from the performance of its implied duties to furnish gas impartially to all, and thereby made public accommodations subservient to its own private interests.

The agreement in controversy, as it is disclosed by the facts averred in the information, evidently could serve, so far as the public was concerned, no other purpose than a restriction upon competition and created at least a basis for a monopoly. The law, as we have seen, is inimical to monopolies and recognizes the right of the public to have the benefit of a fair and healthy competition, and requires that equal facilities and reasonable rates, in carrying out the purposes of such business as that in which appellee is engaged, so far as practicable, be secured to all.

While appellee, by the agreement in controversy, cannot be said to have fully renounced autonomy, still it did so to the extent, at least, that it thereby disabled itself from supplying persons with gas who were patrons of the other company. That by entering into this agreement and carrying it into execution, appellee violated the law and clearly abused the rights and powers conferred upon it by the state, and may be said to have offended against the law of its creation, there can be no question. Such an illegal act or agreement, upon the part of a corporation like appellee, cannot be permitted to override the law, and it was the manifest duty of the state to interpose, as it has done, and call it to account; and if the charge made is established, a deserving penalty ought to be inflicted.

# PAVING AND SEWERS.

## Sewer Ventilation.

[Paper by J. Morgan, surveyor to the Pontardawe Urban District Council, read before the recent convention of the Association of Municipal and County Engineers of Great Britain.]

Any new theory advanced, or practical suggestion made, with the object of improving the system or systems in vogue for the ventilation of sewers will, the author feels sure, receive from every municipal engineer and surveyor that consideration which the importance of the question demands. It will not be necessary to enumerate here the various gases generated in sewers by the putrefaction of sewage matter. For the purpose of this paper it will be sufficient to classify them under two heads, viz., (1) heavy gas and (2) light gas. The heavy gas, being weightier than the atmosphere, rests on the surface of the sewage, and owing to the friction caused thereby, a large percentage is rolled along with the flow towards the outfall, while the remainder is either diffused by the air or dissolved by the liquid.

The other gas, which is lighter than air, presses against the soffit of the sewer, and when the sewage increases in volume this gas is also rolled with the flow in the manner already described. As, however, the flushing is intermittent, the light gas will often ascend along the crown of the sewer to the nearest ventilator, where it will create a nuisance—especially in the case of a surface ventilator—if not previously diluted with sufficient air. Where an ordinary iron pipe forms the outlet the current is greatly retarded, if not quite overcome, during hot weather by the friction resulting from the expansion of the sewer air within the heated vent-pipe. Consequently surveyors often find that the longer the vent-tube is the less effective it proves under the conditions named. Under the old system air rarely enters a sewer to create a draught, except immediately after it has been flushed, when it will rush in to fill the partial vacuum caused by the displacement of the gas and when strong currents of wind blow over the ventilator.

The shaft outlet system, with the surface ventilators closed—excepting a few, which are used as air inlets—is, no doubt, an improvement upon the old method in its present form, but it is defective in many respects, of which the following may be mentioned: (1) The uncertainty, and therefore the irregularity, in the action of the air inlets, inasmuch as they also act as outlets under certain conditions, especially during flushing operations; (2) when a group of two or more outlet pipes are fixed on either side of an inlet, as advocated by those who adopt this system, it is evident that all the air that enters the sewer will pass up the nearest vent pipe, leaving the portion of the sewer extending to the furthest outlet in the group unventilated; (3) the vent pipe, as already explained, becomes inoperative during hot weather, which is the most critical period the surveyor has to contend with in the discharge of this branch of his duties.

It is therefore necessary, in order to properly ventilate sewers—especially those which have to be frequently entered

for cleansing purposes, &c.—that they should be regularly supplied with sufficient air to diffuse and dilute the gases ere they reach the surface or shaft ventilators; and the efficiency of a system of ventilation depends to a great extent upon the relative positions and sectional areas of the several groups of air inlets and outlets.

Having thus briefly reviewed the existing systems, the author will now proceed to explain what he makes bold to describe as his improved method of ventilating sewers. The chief feature is the arrangement of a passage through which air may enter the sewer, while it will be impossible for gas to escape into the atmosphere through the same channel. This automatic air inlet may be briefly described as follows: A grooved flange is arranged at the bottom of the frame which supports the manhole grating; in this flange a hole is formed to receive a pipe, which is firmly and tightly fixed therein. This pipe, which may be 3 inches or 4 inches in diameter, extends into the manhole to a point which will be level with one-third of the diameter or depth of the sewer. The groove in the flange is filled with fine sand, on which the corresponding rim of the upper end of the dirt box rests, thus rendering it air-tight. The air inlet arrangement is fitted at every alternate manhole, leaving the intermediates to act as surface outlets, if not substituted by shaft outlets. It may be well to mention here that the author considers it an indispensable condition that one outlet only shall be placed on either side of an inlet, and that the distance between them shall not exceed 100 yards, and at as equal distance as circumstances will permit.

The author has already mentioned the defects, in his opinion, of the shaft outlet with a uniform sectional area throughout. This plan of outlet should be modified in the following respects, viz., the pipe should taper from 6 inches at the closed manhole, or at a more convenient junction, with a sewer, as the case may be, to 4 inches at a combined junction, and rust pocket fixed at the base of the upright shaft attached, for instance, to the gable of a house. The vertical portion of the shaft should taper in the inverse ratio—that is to say, from 6 inches near the top to 4 inches at the surface line. In order, however, to lessen the atmospheric pressure on the column of air in the pipe, the top end should be bevelled so as to reduce it to the same sectional area as that at the base. The temperature of the sewer air is considerably lower than the outer air during the summer months. The quantity passing through the shaft will be regulated by the reduced area at the base of the upright, so that during hot weather it will have room to expand in its upward and quickened progress through the enlarged and heated vertical shaft, thus reducing the friction to a minimum.

On the other hand, during the winter months this form of outlet shaft will be advantageous, inasmuch as the sewer air, with a higher temperature than the atmosphere, will obtain a passage through it almost free of friction. The conjoint action of the inlet and the outlet on

either side will ensure a regular current of fresh air passing into the sewer, to diffuse and dilute the gas before it passes out at the nearest shaft or grating. For instance, when the sewer runs from one-third full to two-thirds full, with the sewer air traveling in the same direction as the flow, an induced current of fresh air will pass over the air-tight dirt box and through the inlet pipe into the sewer. When the sewer is more than two-thirds full the inlet pipe becomes submerged, and therefore inoperative; but when this point is reached the gas will have been completely diffused by the air or absorbed by the liquid, and under this condition of the flow no putrefaction can take place to form additional gas.

During the time that the sewage runs low natural ventilation will set in between the inlet at the lower and the outlet at the higher level. As the atmospheric pressure on an inlet and surface outlet connected with a sewer having a flat gradient is practically equal, ventilation is neutralized. In such cases the author would recommend that the surface ventilator be closed and a shaft substituted. Surface outlets will, however, in his opinion, suffice for gradients which may be steeper than, say, 1 in 150.

The advantages claimed for this system of ventilation are: (1) The inlet is automatic in its action; (2) each section of the sewer is aerated independently; (3) no gas can escape through the inlet, as it will pass up or down the sewer, above the level of the lower end of the inlet pipe; (4) outlet shafts may be dispensed with, except for flat gradients; and (5) the form of outlet shaft is more effective.

## Street Paving in Eastern Cities.

President F. W. Dohrmann and Supt. L. M. King of the Merchants' Association of San Francisco, several months ago made an extensive tour of eastern cities for the purpose of investigating the subject of street paving. Supt. King has summed up the investigation in a report recently submitted to the association, from which the following is quoted:

"We found that of all the pavements in use in eastern cities at the present time, for both light and heavy traffic, asphalt is universally preferred. Its noiseless and cleanly qualities, combined with great durability and ease in repairing, render it the favorite pavement for all streets except those having a grade or exceedingly heavy traffic. Being a scientific mixture, instead of a natural mixture, as is bituminous rock, it can be obtained of a uniform quality. The perfect smoothness and good repair in which these streets are kept impress any one who has been accustomed to the uneven condition of most of our bituminous rock streets. Buffalo has 215 miles of asphalt streets. In New York its use is constantly increasing and many of the old stone block pavements are being covered with it. Asphalt is a California product and should be used in San Francisco.

"For streets having an exceedingly heavy traffic, such as along water fronts, wholesale districts and similar places



where heavy drays are used and lack of noise is not a necessity, granite or other stone block pavement is generally preferred. These blocks, however, are now always laid upon concrete foundations, and such holes and depressions as we are accustomed to see in our basalt block pavements laid on sand, would not be tolerated.

"The methods in use in eastern cities vary in some particulars, but the following is a general description of the most approved methods.

"Asphalt pavements when laid usually consist of the following: Foundation, concrete 6 inches; binder, 1 inch; asphalt cushion coat, 2 inches.

"The binder, which is now considered a very important part of the pavement, is a layer of asphaltic concrete composed of small crushed rock coated with asphaltic cement. This is laid on the concrete and rolled at once and while hot with a heavy steam roller. Over this binder is laid the asphalt cushion coat, which is also thoroughly rolled while hot with a steam roller, weighing usually 250 pounds to the inch run. This rolling is done very thoroughly with the result that the pavement when finished is well compacted and hard. The binder serves to unite the asphalt coat to the concrete and is used for the purpose of preventing the rolling and waves of which we have so many examples in our bituminous rock pavements where no binder is used.

"While the foundation is usually concrete, New York and several other cities are in many cases using the old stone block pavement for a foundation. In this case the blocks are lowered several inches and after being thoroughly rammed, an asphalt binder is laid and rolled with steam rollers, thus forcing the binder into the joints and cementing the whole together. Over this is laid the usual asphalt coat. New York is laying a great deal of asphalt in this manner and the pavement is guaranteed by the contractors for 15 years, as is done with asphalt on concrete. The city officials speak very highly of this pavement, which costs about one-third less than with concrete foundation, and many of our old stone pavements might be treated in the same manner with advantage to the city, although our foundation is different, being sand instead of rock and clay.

"Next to asphalt, vitrified brick is the preferred pavement in most cities. For residence streets and business streets with both light and heavy traffic, where entire lack of noise is not required, vitrified brick makes a very desirable pavement. It is easily cleaned, is comparatively noiseless and very durable. No pavement has a more attractive appearance than a well laid and clean vitrified brick pavement.

"I noted with pleasure that California asphalt was used in many cities and that the city officials expressed themselves as entirely satisfied with it. Certainly the appearance of a street recently laid in Minneapolis with California asphalt left nothing to be desired.

"The United States Inspector of Asphalts and Cements for the District of Columbia has informed us 'that there are several asphalts in California which will make a pavement equal in every way to those made from Trinidad,' which is the asphalt generally used in eastern cities, and that he has recently inspected a number of pavements made with California asphalts that are in splendid condition under very heavy traffic.

"The brick used in brick pavement is a specially prepared vitrified brick of exceeding hardness and toughness. The

foundation is of concrete six inches thick. Upon this is laid a layer of sand one inch in thickness. The bricks are set on edge in the sand and rolled with a heavy steam roller or rammed until the surface is perfectly even. After being rolled to an even grade the joints are filled with an asphaltic cement. Portland cement or sand is sometimes used for filling joints, but asphalt is generally preferred. In some cases when a cheap pavement is desired, the concrete foundation is omitted, the bricks being laid on a sand foundation, but such a pavement is not so satisfactory as one on concrete.

"The question of guaranteeing and maintaining pavements after being laid, is one which receives a great deal of attention in eastern cities and undoubtedly contributes materially toward securing good pavements.

"Asphalt is usually guaranteed for ten years. In Minneapolis 10 per cent. of the contract price is withheld until the expiration of the ten years and in addition the contractor gives a bond for 15 per cent. of the amount bid. The city allows 4 per cent. interest on the 10 per cent. held back, until the expiration of the guarantee, at which time the balance remaining, after deducting cost of repairs made by the city, is paid to the contractor.

"In New York, in addition to the usual bond, 30 per cent. is held back. At the expiration of five years, and at the end of each succeeding year during the remaining ten years, the contractor receives 3 per cent. of this amount. While this causes the original cost to be higher than in other cities it also results in good pavements being laid and the 30 per cent. is estimated to be about the cost of maintenance during the last ten years. As soon as the original guarantee on each street expires, a contract is immediately let for keeping that street in repair for an additional fixed term of years. Original payments which are paid for by assessment are guaranteed for only five years in order to make the first cost to property owners less.

"The regulations regarding what constitutes 'out of repair' are very strict in eastern cities. In Buffalo and Minneapolis a depression which will hold water or any other depression or ridge exceeding three-eighths of an inch when a four-foot straight edge is applied to the pavement is sufficient to require repairs. In New York one-half-inch depressions are sufficient to require repairs. Waviness also is not permitted. There is hardly a block of bituminous pavement in San Francisco which would not be considered out of repair if such a test were applied to it. It was interesting to note the care used in making repairs in asphalt pavements and to compare the results with the unsightly patches so frequently seen on our bituminous rock streets. When the depressions are slight, the surface is softened by heat and scraped off, exposing a fresh surface to which the new asphalt will adhere. In other cases the surface coat and binder are cut out. The holes are carefully cleaned and the edges of the old pavement are coated with hot liquid asphalt. When repairs are made next to car-tracks the edge of the rail is painted with hot asphalt, thereby securing thorough adhesion between the rail and the new asphalt. New binder and asphalt surface are then laid and unless the patch is quite small it is rolled with a steam roller. The edges are then so carefully smoothed off that a few hours afterward the patch can hardly be distinguished from the surrounding pavement.

"Brick pavements are usually guaran-

teed for five or ten years. A depression exceeding three-eighths to one-half inch is sufficient to require repairs.

"Various methods are used to overcome the usual objectionable results from opening pavements for laying pipes, etc. The best system is probably that used in Washington, D. C. There the city makes all such repairs with its own workmen. A regular scale of prices per square foot for each kind of pavement is established. Any plumber or contractor must deposit according to these rates, a sufficient amount to cover the cost of repairing the opening which he expects to make. Each registered plumber is required to deposit \$50 before being granted a permit to make a cut in any paved street, and this amount he must keep good whenever called upon to do so.

"Street railway companies and other corporations making large cuts in pavements are required to deposit a larger sum, varying from \$1,000 to \$5,000.

"In some other cities the city lets a contract to one contractor, who makes all such repairs at fixed prices, the party making the cut depositing the cost in advance. Either method would be a great improvement over the lax methods in use here."

#### Brick Paving in the Middle West.

Mr. H. Foster Bain, assistant state geologist of Iowa, has an instructive and pleasantly written article in the July "Review of Reviews" on the subject of brick paving in Western towns. The article opens with this appreciative observation:

It is a far cry from the small town of a few years ago to that of the present in any progressive portion of the country. There has been a remarkable improvement in the physical and sanitary conditions throughout the country. Water works, electric lights, gas plants, park systems, paved streets, street cars, telephones, and all those agencies which minister to human comfort have been very widely adopted in these smaller places. This is particularly true of the towns of the middle west. The people of this region are restless and remarkably progressive. The towns and cities are ambitious, and municipal improvements are usually voted for readily. A single town perhaps improves its streets and reaps the benefit. The power of example and the force of competition unite, and all the surrounding towns take up the matter of paving.

After commenting upon the rapid advancement made by Western towns in providing sewerage systems, water plants, cement sidewalks and public lights, Mr. Bain enters into a discussion of the merits of the various paving materials as applied to small municipalities. He finds that macadam becomes rut-cut and can be kept in good condition only by unrelenting vigilance and at large expense; cedar blocks, having had a large use, have shown unfitness by being thoroughly unsanitary; cobble stone and granite block are noisy, dirty and offer too great resistance to traffic; sheet asphalt is meritorious, but its proper laying requires expert workmen, and consequently repairs become a difficult problem in a small town. The writer then continues:

There remains but one important kind of pavement to be considered, and that is one whose introduction and wide use is especially a middle West achievement. \* \* \* Bloomington, Ill., is a thriving and ambitious city, so located as to have no stone or other good paving material at hand. It has, however, a considerable brick industry, and about 1875 the experiment was made of using the harder-burned brick for paving. The plan of the work developed there is now used widely and is essentially as follows: The foundation consists of cinders, spread four inches thick and rolled thoroughly. Over the cinders a thin cushion of sand is spread. This is covered with a layer of

brick laid flat and with their longer diameters parallel to the street. These are in turn rolled and covered with a two-inch cushion of sand. The latter forms a base for the second or top course of brick, which are set on edge and at right angles to the street. When they have been put in place and rolled, either sand, pitch, asphaltum, cement, or a patent mixture known as grout is poured into the joints to act as a filler. This form of pavement is known as two-course work and is laid wherever traffic is not especially heavy and the materials for making a good macadam or concrete base are expensive. The brick used for the lower course need not be of first quality, though they must be at least hard-burned.

When materials for concrete can be cheaply obtained a one-course pavement is usually laid. For such work the street is first graded and rolled, then covered with six inches of concrete. Over this a sand cushion and top course of brick is laid as in other pavements. The foundation of sand is to allow the proper bedding of the brick resting upon it in order that the upper surface of the pavement may be smooth. The brick used for the top course are called vitrified. This is a misnomer, as a really vitrified brick would be so brittle as to chip to pieces under street traffic. Semi-vitrified or incipiently vitrified better describes the condition of the brick which make the best pavers.

In the central West first-quality pavers now sell for about \$10 per thousand at the point of manufacture. Away from such a point freight charges must be added. At these rates brick pavement can be laid in much of the region at from \$1.25 to \$1.50 per square yard—in some cases for \$1 or even less. This amounts for an average business block in a small town to about \$2,500. In the residence portion of such a town the driveway may be reduced to thirty feet in width and either side of the pavement parked, thus giving a very pretty street at a cost of about \$1,500 per block. In very small places an eighteen-foot roadway is sufficient for all purposes, in which case the cost is in the neighborhood of \$1.25 per front foot. At such prices even the smallest towns can afford some paving, and its use is rapidly spreading.

The industrial and social effects of paving a street are of great importance. Paving the streets to some extent reduces the price of the material hauled over them. On a well-paved street the traction may be perhaps but one-sixteenth of that on a dirt road, and in case of bulky material, such as coal, where the cost of local delivery is a considerable item, the saving due to the larger loads which may be hauled is reflected in the retail price. It is, however, from a sanitary point of view that paved streets are most desirable. Smooth, clean streets are almost necessary to the health of a community. The prevention of the accumulation of filth and the corresponding decrease in disease is one of the chief benefits of paving. When a city is paved with brick and its sewers are laid with the same material the streets may be cleaned with a stream of water from a fire hose without fear of the sand cutting either pavement or sewers. A small gang of men may thus clean a large area in a short time. Attractive streets serve to draw trade, and of two similarly situated towns, one paved and the other unpaved, the former will have the advantage. Well-paved streets stimulate municipal interests and civic pride. When the people have paid for having their streets put in good condition they feel an interest in keeping them so. Franchises for street railroads or for any enterprise requiring the tearing up of the streets are scrutinized with greater care, and almost invariably a provision is inserted prescribing that the corporation using the street shall help pay for the paving.

#### A Novel Plan for Road Construction.

The aldermen of Dansville, N. Y., have under consideration a novel plan for the construction of McAdam pavements on the main thoroughfares of that village. At a recent meeting Mr. M. L. Davis appeared before the board and explained his novel idea. He said:

Under present methods the public highways are constructed on a plan which gives them a crowning center with gradual slopes of from eight inches to one foot in depth, reaching to double gutters situated on either side of the street. These side gutters are connected with the main sewers under the street center by branches which are placed in position at short intervals. The plan which I advocate will,

if carried out, form a road bed starting at the sides flush with the sidewalks, thence with a gradual declivity of not to exceed one foot, extending to the center of the highway, where a single gutter takes the place of the two now in common use, and where the drainage passes direct from the single center depression to the sewer below.

The advantages to be gained from such a construction are many, while there is no valid objection to be encountered. Under this plan and upon the ground of economy alone, the fact that no subordinate or branch sewers will be necessitated to convey to the main pipes will mean a vast saving of expense. The principal advantage to be gained, however, is the thoroughly dry and clean condition of streets that will result. There can be no puddles of water nor collection of refuse next to the sidewalks. There will be no drainage from gutters into basements and cellars. There will be no longer a constant aggregation of gases given off from unclean surface waters in warm weather. On the contrary, this drainage and refuse will be conveyed to the farthest possible point from pedestrians and building owners, and the impure gases will have a free escape to the atmosphere above. The importance of this change in construction with respect to health conditions cannot be overestimated. Besides the advantages naturally suggested by a description of this method of road building, one that does not appear at first thought, perhaps, is the fact that such construction would give a perfectly defined highway and one where the possibility of accident would be reduced to a minimum. There could be no question as to the rights of passing vehicles. These would be confined to their own territory of the thoroughfare by the intervening gutter and yet there would be sufficient room to permit such vehicles to pass abreast in the same direction.

The objection which is brought forward against this plan, that the center gutter referred to might inconvenience travelers, may be silenced at once by the answer that such a gutter can be constructed with upper coverings which could not retard passage in any direction.

The plan has not been adopted by the village of Dansville, but will receive careful consideration. The general public is much interested in the discussion of the idea and may secure its use in macadamizing the streets. If it is tried the experiment will be watched with much interest.

#### To the Highest Bidder.

The Barber Asphalt Paving Company have succeeded in landing the contracts for asphalt paving in Newark, N. J., despite the fact that they bid higher than their competitor, the New Jersey Asphalt Company. On July 21 the board of works, with only three of the five members voting, awarded contracts to the Barber Company as follows:

Street.	Per square yard.	Total.
Clifton avenue .....	\$1 95	\$12,319 50
Burnet street .....	1 90	10,264 60
Green street .....	1 90	10,061 00
Elm street .....	1 90	11,850 00
Livingston street .....	1 90	13,490 00
Charlton street .....	1 89	11,405 00
Nichols street .....	1 89	4,313 50
Viller street .....	1 89	7,871 00
Dey street .....	1 89	3,730 00
Jackson street .....	1 89	13,196 50
Pathgate place .....	1 89	3,351 00
North Ninth street.....	1 89	23,507 00

Total ..... \$125,358 50

On six of these jobs the New Jersey Company bid lower than the Barber, the difference in the aggregate being \$1,609.10.

#### Cut Rate Sewer Work.

It seems safe to say that the city of Elmira, N. Y., leads the world in low rates on the laying of sewer pipe. The following contracts, recently let, are submitted as evidence.

One calls for the laying of 900 feet of 12-inch vitrified sewer pipe at an average depth of nine feet, with two manholes and two catch-basins. The soil is gravelly. The contractor supplies all materials and furnishes all labor at from \$1.50 to

\$1.75 per working day of eight hours and is paid at the rate of 40½ cents per lineal foot.

Another contract calls for 395 feet of 15-inch vitrified sewer pipe and 1,572 of 12-inch, with 6 manholes, 9 catch-basins, 44 12x6 Y's, 10 12x8 Y's, 1 15x8 Y, and 6 6x15 Y's. The soil is clay and boulder. Wages at \$1.50 to \$1.75 per day of eight hours. Contractor furnishes everything and receives 81 cents per lineal foot.

#### Macadam Roads on Clay.

Gomer Jones, street engineer of Geneva, N. Y., in his annual report describes the plan adopted by him for constructing macadam roads on clay, as follows: Two inches of stone was forced into the clay soil wherever possible "and sorted and packed until this sub-grade was made uniform and solid from one end to the other." The object of this was to ensure a uniformly curved foundation for the macadam proper, or, in other words, to prevent the clay from working up into the bed of the macadam or the latter from working down into the clay. On top of this foundation eleven inches of broken stone was placed, the first six inches being two-inch stone from the adjacent quarries at Waterloo, N. Y., and the top five inches being Hudson river trap rock. The cost of the Waterloo stone was \$1.875 and of the Hudson stone \$2.50, spread, in each case. Telford was not used, because it was believed that the clay would work up between the large voids of the foundation.

#### Street Sweeper Successfully Tried.

The Charlton pick-up street sweeper was given a trial at Port Chester, N. Y., recently, and the "Journal" of that city summed it up in this way:

The street was unusually dirty and the trial a severe one, and we do not believe that any one will challenge the statement that the work was well and expeditiously done. The street was swept far cleaner than it had been done by hand. Now as to comparisons. The work Friday evening was done by inexperienced persons who had never seen the sweeper before it was tried here, and estimating the work done, it will require between four and five hours to sweep the entire pavement. On a recent occasion eighteen Italians were employed to sweep the pavement. They labored from early evening until late in the morning one night, and the next worked from early evening until three o'clock the next morning. Therefore it required about fifteen hours for eighteen men to do what two men with the sweeper did in five hours.

#### Wooden Blocks in Chicago.

Chicago is suffering an unusual penalty for using wooden blocks for street paving. In most cities the penalty is the cost of tearing up the decaying blocks after they have seen a few years service and replacing them with brick or asphalt. On a number of streets in Chicago the wooden pavements, full of ruts, holes and disease germs, are allowed to remain as a menace to life and limb. It seems that the city government of the Windy City lacks the funds necessary to repave even the streets that are in a dangerous condition. If Chicago had taken to a more liberal use of brick and asphalt five or six years ago her streets would now be in much better shape.

#### Brick Paving for Cambridge.

The committee on roads and bridges of the Cambridge, Mass., council, which recently visited a number of cities to inspect street pavements, has submitted its report. The members of the committee,



the superintendent of streets and the city engineer, were unanimous in the opinion that vitrified brick should be used in the future on the streets of Cambridge. The council received the report with great interest, but will act on it cautiously. Only one or two streets will be paved with brick at present, and if these prove successful the city will go into brick paving on a large scale.

#### Improvements at Baton Rouge.

Baton Rouge, La., is among the many Southern cities that have taken up the matter of municipal improvements in an enterprising and businesslike way. The people of that city have voted to issue \$200,000 of bonds, the proceeds to be applied as follows: For sewerage system, \$55,000; for street paving, \$40,000; for city hall and school house, \$45,000; for levee, \$15,000; for construction or purchase of water works, \$35,000; for cast iron bridges, \$10,000. Plans for the sewerage system will be made first, in order to have the contracts let about Nov. 1, and then the other improvements will follow quickly.

#### An Automobile Street Cleaner.

The latest invention in the way of automobiles is an electric street-cleaner. The apparatus, says the Paris correspondent of "The London Daily Mail," is the invention of MM. Thomas and Lerocher. It consists of an ordinary circular brush, over which there is a tank containing water. As soon as the vehicle is set in motion the water is sprinkled on the ground, and the brush, which follows, carries off the dust thus moistened. The inventors claim that the vehicle will clean the streets much more thoroughly than can possibly be done by any method at present in use.

—Salem, N. J., will issue \$35,000 of bonds for street improvements.

—Bids will be asked at once for laying 1,466 square yards of brick pavement on Parade street, Erie, Pa.

—Greensboro, N. C., has voted to issue \$65,000 of bonds for sewers and \$75,000 for street improvements.

—The council of Kendallville, Ind., have under consideration the paving of several streets with brick.

—Contracts will be let this month for laying 19,000 square yards of brick pavement at Atlantic City, N. J.

—J. M. Quill has the contract for paving South Third street, Hamilton, Ohio, with asphalt blocks at \$23,017.

—W. E. Myers of Kenton, Ohio, has been engaged to prepare plans for a complete sewerage system for the city of Ravenna, Ohio.

—The contract for the construction of the main sewer at Charles City, Ia., has been let to William Horrabin of Iowa City, whose bid was \$6,046 for Sewer A and \$7,900 for Sewer B.

—The report of City Engineer Geo. A. Carpenter of Pawtucket, R. I., contains two illustrations of sewage filter beds after a snowfall, showing the advantage of furrowing the beds in the fall, so that the sewage may circulate beneath the snow.

—During 1898 a daily average of 17,700,000 gallons of sewage was treated by the chemical precipitation works at Worcester, Mass., using 1,073 pounds of lime per 1,000,000 gallons of sewage. Analyses show the condition of the water in the Blackstone river, below the works, is much better than in 1897, and still better than in 1893.

#### National Association of Municipal Electricians.

The first meeting of the National Association of Fire and Police Telegraphic Superintendents was called to order by Mr. Frank C. Mason of Brooklyn, New York, in the Clarendon Hotel, Brooklyn, Tuesday, September 15th, 1896, in pursuance of a call sent out by him some months before. At this meeting the constitution and by-laws of the association were passed upon and adopted, and Mr. Mason was elected the first president of the organization.

The second meeting of the association was held at Nashville, Tenn., during the Tennessee centennial celebration in August, 1897. At this meeting Mr. W. Y. Ellett of Elmira, N. Y., was elected president. After a very pleasant and instructive two days' session the meeting adjourned to meet at Elmira in August, 1898. A large number of delegates, representing many cities, presented themselves for membership at the Elmira meeting.

The name "International Association of

Thomas Flood, commissioner of wire department, Boston; M. W. Mead, city electrician, Pittsburgh; George F. MacDonald, superintendent of fire telegraph, Ottawa, Canada; S. D. Wheeler, superintendent of fire telegraph, Springfield, Mass.; W. H. Thompson, superintendent of fire telegraph, Richmond; Captain William Brophy, chief electrician, Boston; John Weigel, superintendent of police telegraph, Boston. The discussions on the papers will be open and free, so that any member wishing special information regarding any point touched on will be given a proper hearing and consideration.

The Board of Trade of Wilmington has taken the matter of entertaining all those who will be present at this convention in hand, and has arranged a most elaborate program, consisting of boat rides on the Delaware Bay, a visit to the fortifications recently constructed by the government at Delaware City, which were intended to protect the cities



J. W. AYDON, President.



FRANK C. MASON, First President.

Fire and Police Telegraphic Superintendents" was looked upon as too large and cumbersome in its nature, confining the association to special lines. A meeting of the executive committee was called at Boston in February, 1899, and after consideration, it was decided to change the name to that of "The National Association of Municipal Electricians." This move on the part of the executive committee has proven to be a wise one, as it has thrown the door open to all electrical people employed by municipalities.

During the past year the association has largely increased in membership, both active and associate, and at the present time it has over one hundred and fifty of the principal cities in the United States represented by some member of their electrical departments. Mr. J. W. Aydon, the present president of the association, was elected at the Elmira meeting, and has by continual effort succeeded in getting many of those deeply interested who were lukewarm up to this time.

Letters received from Los Angeles, San Francisco, Salt Lake City, Toronto and all the wide-awake western cities, point to a large attendance at Wilmington, Del., where the next meeting of the association is to be held Sept. 5, 6 and 7. During this meeting valuable papers will be read by the following:

of Wilmington and Philadelphia during our late war with Spain; trolley rides, a review of the fire and police departments, a reed bird banquet at the Clayton House, etc. The governor of Delaware and the mayor and city council of Wilmington have accepted invitations to be present. A special rate of one fare and one-third has been arranged on all railroads from all parts of the United States. All local roads leading to Wilmington have given the association a rate of one fare for both ways.

An electrical exhibition has been arranged for, to be held during the Wilmington convention. This exhibition will open on the evening of September 4 and continue for the entire week. Pyle's Bicycle Academy, the largest building in the state of Delaware, has been secured for the exhibition. The following well known electrical houses in New York, Chicago, Boston and other cities have secured spaces and will exhibit their latest products:

Roebbling & Co., Wilmington, Del., musical instruments.

Wilmington Electric Light Co., cooking by electricity and other electrical novelties.

Morris & Co., Cocker & Wheeler motors and novelties.

Pyle Electrical Bicycle Lamps and Supplies.

William Lawton, Wilmington, incandescent lamps and electric novelties.

Garrett, Miller & Co.

Bundy Lamp Co., Elmira, N. Y., novelties in lamps, etc.

Boebling Sons & Co., submarine cables and insulated wires.

Universal Electric Jacket Switch Co., New York, novelties in electric lights, switches and cut-outs.

James A. Godfrey, New York, Habershaw wires, cables, etc.

Mechanics' and Inventors' Electrical Co., New York, electrical novelties and supplies.

Standard Underground Cable Co., subways and wire for underground telephone and electric light, etc.

Okonite Co., high grade insulated wires and cables for aerial and submarine cable and torpedo work; Okonite and Manson insulating tape.

Shelby Electric Co., Shelby, O., incandescent lamps and novelties in electric effects.

F. M. Ferrin, Boston, insulated wires and cables for fire and police telegraph work.

J. S. Wilson, Boston, circular loom and iron conduit for interior installation.

Gamewell Fire Alarm Telegraph Co., a complete working central office, fully equipped for fire and police telegraph departments, with storage battery and switches.

Baines Primary Battery, working exhibit of Baines batteries as applied to fire and police telegraph systems.

Marchado & Roller, volt meters, ammeters, and all styles of measuring instruments for electric currents, showing the celebrated Whitney instruments set up and in working order.

Montauk Multiphase Cable Co., complete working exhibit showing application of cable for fire and police protection in all its branches.

Frederick Pearce, electric turn tables for show windows in stores and other electrical novelties, fire and police telegraph supplies.

Monarch Fire Appliance Co., a complete working exhibit showing Kilfyre powder for extinguishing fires.

Henry Stanley, National India Rubber Co., rubber insulated wires and cables for submarine and aerial work.

The Stock Quotation Co., New York, quotation instrument partially destroyed in the fire in Windsor Hotel.

Postal Telegraph Co., office in working operation with operator in attendance.

Western Union Telegraph Co., office in working operation with operator in attendance.

Long Distance Telephone Co., pay station and central office in working operation.

Local Bell Telephone Co., Wilmington, telephone exhibit.

Delmarvi Telephone Co., Wilmington, showing telephones as supplied to business offices, stationary or portable.

Edison Cinematograph Co., exhibition of moving pictures, including pictures of late war in Cuba, naval engagement in Manila, the May Irwin kiss, etc.

Safety Insulated Wires, for aerial and underground work, submarine work, etc.

Rolff Electric Co., Chicago, electric novelties, supplies and merchandise.

Day's Kerite wire and cables for aerial, underground and submarine work, also a full line of insulated wire for all uses, flexible cords, lead covered cables, insulating tape, etc.

Automobiles—Arrangements are being perfected for an exhibit of electric carriages, which will be the first of these wonderful machines ever seen in Wilmington.

"X Rays."—The committee having this matter in hand report that they are in correspondence with a well known expert in this line, and when arrangements are completed the "X Ray" exhibit will be one of the principal features of the exhibition.

H. B. Mason, Mgr., Kings County Electric Equipment Co., electrical supplies for fire and police telegraph system, electric light installation, electric fans, phonograph and incandescent lamps, burglar and fire alarms, etc.

Illumination—The exhibition hall will be illuminated far beyond anything ever attempted before in Wilmington, the lamps aggregating over 100,000 candle power.

—Mr. William R. Hill, vice-president of the American Water Works Association, has been engaged by the city of Elmira to make an estimate of the value of the plant of the Elmira Water Works Company.

### Commissioner Flood's Report.

Thomas W. Flood, commissioner of wires, Boston, has submitted his annual report, which is an interesting document showing in detail the immense work of an important municipal department. The report says:

The earnest protest of the commissioner of wires against the granting of pole rights in the streets, without proper supervision as to their location and erection, having been heeded, very few complaints are now received from citizens, as poles are now so placed as to cause as little annoyance to abutters as possible.

The underground system for the overhead wires is now completed in the prescribed district, but the extended use of electrical energy compels some of the electric companies to add to their existing conduit systems, while there are some who have had no overhead wires at any time now engaged in building conduit. With the close of the present year all wires not exempt by law will disappear from over the surface of the streets within the prescribed district. But two classes are exempt—long distance telephone and street railway trolley wires. The removal of overhead wires for the ten years beginning on January 1st, 1900, will not be confined to any particular section of the city, but in such streets and avenues as in the judgment of the commissioner of wires contain poles and wires that are unsafe and a serious obstruction in case of fire. There is no doubt but what a large amount of overhead wire will be placed underground in sections of the city other than that prescribed by the wire department.

The number of poles, fixtures and overhead wires removed since the wire department was organized is as follows:

Poles removed .....	2,041
Fixtures of all kinds .....	12,891
Wire on poles removed (feet).....	2,359,050
Wire on fixtures (feet).....	12,417,600
Wire in cables (feet).....	13,845,872
Wire dropping from roofs (feet)....	1,562,186
Railroad feed wires (feet).....	288,722
Railroad guard and span wires (feet) .....	340,410

Total amount of wire removed (feet) .....

30,813,833  
This is about 5,836 miles. Of this amount 18,488,300 feet, or about 3,502 miles can be classed as "dead" and abandoned wire, some of which was removed by the owners, but nearly all was removed by this department.

The interior division examined 565,135 incandescent lamps, 11,644 arc lamps, 4,104 electric motors with a total of 17,074½ horse

as necessary as the first inspection. The condition of the wires and appliances in many of the best dwellings for instance may be and probably are in an unsafe condition. It is the duty of this division to know the exact conditions and have proper remedies applied before fire or loss of life result from causes that are preventable, but at present that duty must be honored in the breach and not in the performance.

—Nearly 17,000 square yards of brick pavement is to be laid at once at Charleston, W. Va.. Bids for the work were opened on August 10. The specifications call for three inches of sand, one-inch planking, two and one-half inches of sand, brick on edge, with sand filling.

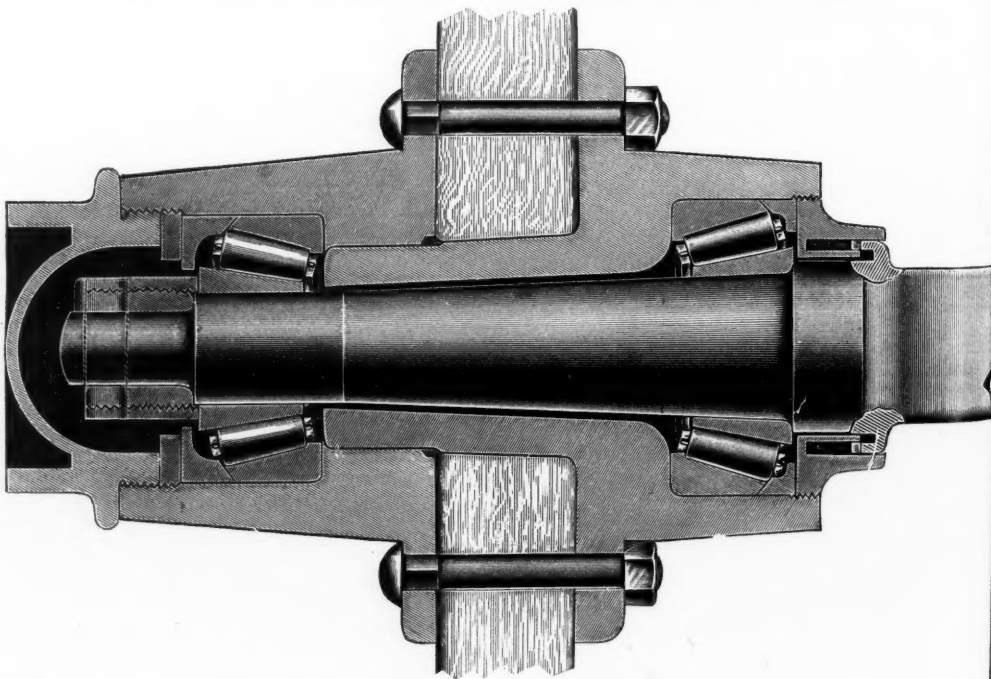
### A Roller Bearing Axle.

In fire department apparatus this seems to be an age of perfection. To lessen the pull, quicken the speed and reduce to a minimum the jolting of steam engines, hook and ladder trucks, etc., we now have in successful use the roller tire and the roller bearing axle. Neither of these useful devices is any longer considered in an experimental stage, the Kelly Springfield rubber tire and the Grant roller bearing axles having been put to the severest of practical tests and not found lacking in the qualities claimed for them. The chiefs and mechanical superintendents of the various fire departments where these two worthy inventions have been put in use are enthusiastic in their praise of them.

With this article appears an illustration of the Grant roller bearing axle; a glance at the cut shows at once the simplicity and the superior merit of the axle. It revolves on tapered rolls—not on balls. It lessens the pull from 33 1-3 to 40 per cent., is strong and durable, easily set and adjusted, and requires oiling only about four times a year. The Grant bearing is made from the best of material, by skilled workmen and with the latest improved machinery. All wearing surface is case-hardened and tempered in oil, and then ground accurately to gauge.

The adjusting nut is so constructed that the least particle of wear can be taken up in a moment's time. It is impossible to jar this nut loose after it is set. The wheels may be taken off the spindle, the bearing taken apart, cleaned and oiled, and yet not change the adjustment.

The Grant bearing can be used with any kind of wheel, but the bearing illustrated on this page is designed especially for the Archibald wheel; the hub and bearing com-



power; the number of defects discovered by the inspectors and caused to be corrected was 18,984.

The number of men in this division is not sufficient to perform all the duties imposed on it by the acts of the legislature, as a result some of the most important work must be left undone.

The reinspection of electric equipments is

bined in one. This is not the Archibald hub, but the Grant hub, built to fit exactly in its place. Old wheels can be fitted with this combined hub and bearing with but very little labor.

Full particulars regarding this splendid improvement for the fire service will be furnished by the Grant Axle & Wheel Co., Springfield, O.



**Portable Lighting Apparatus.**

The accompanying illustration represents a portable lighting apparatus, of which the dynamo is built by the Onondaga Dynamo Company of Syracuse, N. Y., direct, connected to a Shepherd upright engine, the latter together with the boiler and truck being built by the American Fire Engine Company of Seneca Falls, N. Y. The dynamo is of the



Onondaga Dynamo Company's well known "Clover Leaf" type and is especially adapted to this service. The American Fire Engine Company have already sent out several of these outfits, and they are meeting with much favor. This company makes a specialty of dynamos suitable for lighting public buildings.

**The Standard Voting Machine.**

It is apparent that voting machines have come to stay.

The city of Buffalo has recently adopted the Standard Voting Machine, ordering one hundred and ten machines to be used in November.

The reduced expenses of voting in this way will pay for the equipment in less than four years.

Expenses in former years have been \$45,000.

The saving of from \$15,000 to \$17,000 annually is made by reducing the election districts from 155 to 108, and no ballot clerks are required, saving \$8,130; delivering and gathering ballot boxes, new booths and putting up old booths, \$2,320; difference in cost of printing over \$7,000.

The Standard Machine was used in the seventy-three election districts of Rochester last November with perfect success.

Complete returns were delivered at the central office in thirty-nine minutes, the first one arriving in nine minutes.

The saving to Rochester in one election was over \$6,000.

Utica tried two machines, and immediately ordered twenty-eight.

With the Standard Voting Machine the vote is cast in perfect secrecy.

The illiterate man need not feel that he may lose his vote.

There are no defective ballots.

It is so simple in construction that there is no liability of its getting out of order on election day.

It will be on exhibition in Syracuse at the convention of the League of American Municipalities, September 19 to 22. \* \* \*

**Lake Shore Route.**

No more beautiful scenery of its class abounds than may be seen along the great double track route from Buffalo to Chicago. From the road bed up, including the superb equipment, courteous attention and service, everything known to Yankee genius, that money could buy has quickly been acquired by this road to add to the comfort and lessen the inconvenience of the traveling public.

If you take this route when going to the gathering of the League of American Municipalities, which will be held at Syracuse, N. Y., September 19-22, you will be charmed with the lake scenery along the shore of Lake Erie. Its beauty is unsurpassed in the world. All information will be cheerfully furnished on application to the Lake Shore Railway, Cleveland, O.

**Wilkesbarre Lighting Question Settled.**

Wilkesbarre, Pa., councils have just reached a pleasing settlement of the public lighting question in that city. Some weeks ago three different companies applied to councils for franchises to build and operate electric plants, offering rates to the city and to private consumers somewhat less than those charged by the Wilkesbarre Electric Light Company, the

holder of the present city contract. The arguments on all sides were heard by a committee, which also considered the question of municipal ownership. The report of this committee, which was adopted by councils, settled the whole matter until April 1, 1902, when the present contract for city lighting expires. The committee report stated:

That considering the contract existing for furnishing city lights until April, 1902, and all of the several proposals submitted by the respective companies (which proposals we submit herewith), we fail to find wherein the city or its citizens will be benefited by the granting of any electric light franchise at this time, and recommend that the application therefor be refused.

That the Wilkesbarre Electric Light Company submitted the following proposition (based upon the condition that the city shall not operate any electric light plant or grant any franchise permitting the furnishing of light in this city previous to April 1, 1902), to wit:

To furnish electric light for the city buildings (which is estimated to be worth from \$1,200 to \$1,500 per year) free of charge.

To furnish all electric street lights required, in excess of 301 lights now contracted for, at the rate of \$64 each per year.

And to furnish electric light for commercial and domestic purposes to companies, firms and individuals at a maximum rate not to exceed 10¢ per kilowatt hour until April 1, 1902 (which rate is lower than that submitted by any company asking for franchise).

Your committee recommend that the above proposition be accepted.

Councils passed a resolution instructing the proper city officers to execute the necessary contract with the Wilkesbarre Electric Light Company to put into effect the recommendation contained in the committee report.

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**FREE MUNICIPAL BATHS IN BOSTON.**

[Abstract from a pamphlet written by William J. Cole and published by the municipal printing office of Boston.]

The entrance of Mr. Josiah Quincy into the office of mayor, three years ago, marked the beginning of a new chapter in the history of free municipal baths in Boston. Hitherto the providing of public bathing facilities by the city had been regarded as permissible in the absence of private effort in that direction; Mayor Quincy looked upon it as but one phase of the general obligation of a city "to secure, in some measure, the enjoyment by all of at least a certain minimum of elementary social advantages." Hitherto, also, the chief, if not the sole ground on which the work was justified had been the promotion of the public health through bodily cleanliness; Mayor Quincy put it at once on the threefold basis of health, physical development, and enjoyment, regarding the supplying of suitable means for wholesome recreation and pleasure as coming well within the lines of municipal policy. The effect of this change of attitude was at once apparent. Among the early official acts of the mayor was the appointment of a committee of citizens to select a site and secure plans for a bath-house that should be open all the year round. This building was to be not only thoroughly equipped for hot and cold baths, but in its architecture and appointments it was to be of such a character as would appeal to the imagination of the people, and give the whole subject of public baths a new dignity in their eyes. The baths already in existence, all of which were beach or floating baths along the water frontage of the city, were supplied with additional conveniences, such as fresh-water sprays, to increase their usefulness and make them more popular; and steps were at

once taken to open additional water-side baths.

Finally, in the spring of 1898, a new city Department of Public Baths was created, and all the baths maintained by the city were placed under its direction. This new department is administered by seven unpaid commissioners, two of whom are women, appointed by the mayor for terms ranging from one to five years. A secretary is employed by the board to act as its executive.

With the creation of the bath department began the real work of expansion. During the summer of 1898 the city had in operation six beach baths, thirteen floating baths, two river baths and two swimming pools as against fourteen baths of all kinds a year ago.

That so extensive a system of public bathing accommodations is not without its warrant in the needs of the people, is seen from the large percentage of the population destitute of proper means of bathing at home. According to the tenement-house report made a few years ago by the State Bureau of Labor Statistics, of the whole number of families and persons occupying rented premises in Boston, only about one-fourth were supplied with bath-rooms.

Evidence of a more direct character that Boston's present bathing facilities do not exceed the demand is furnished by the increase in the number of bathers. During the season of 1898 the baths were used by 1,920,368 persons, while the number of bathers in 1897 was 657,275. This increase of patronage, as it is evident, was far more than commensurate with the additional opportunity offered.

A proposition of the first importance in connection with the subject of free popular bathing is that in a large city it should be furnished through a considerable number of establishments designed for local use, rather than by one or two on a large scale at central points. In other words, the people of a given neighborhood should not have to go too far in order to avail themselves of such facilities. If the bath is within half a mile to a mile of the home, it will be readily and extensively used; if it is two or three miles away, its use will be very greatly restricted.

This fundamental proposition has been recognized by Boston from the outset. Thirty years ago, when the system was established, a number of baths were opened, each in a different section of the city. The site for a bath is always selected with special reference to its accessibility to the neighborhood that the bath is intended to serve. It is an interesting fact that every district of Boston, with one or two exceptions, has more or less frontage on the ocean or some river. A glance at the map showing the distribution of public baths now in operation during the summer months will make it apparent that no considerable quarter of the city is without its local bathing establishment. Some of these baths, because of their location or the conveniences that they afford, have a patronage from regions far beyond their immediate neighborhoods.

The L street seaside bath, opened in 1866, was the first municipal bath established in the United States. A long, low frame structure provides a great number of dressing-rooms and an adjoining building is fitted up with hundreds of lockers for the use of boys. These buildings, together with a high board fence at either end, extending well out into the water, effectually shut in the bath from all outside observation. By a special

traditionary privilege, bathing suits need not be worn at this particular bath, and thousands of men and boys, of all sorts and social conditions, disport in the water or lie stretched out on the sands in entire nudity at this place every day throughout the summer.

Farther along on the beach is a bathing place for women and girls, three good-sized plain wooden buildings furnishing the necessary dressing accommodations.

Next in point of popularity to the L street bath is the recently opened bath at the harbor-side park at the North End. This affords a greater variety of attractions. A flat roofed, solidly constructed building runs along the westerly side of the park and contains the dressing quarters for men and boys. The top of this structure was designed originally to serve as an elevated walk conducting to the upper deck of a great promenade pier that bounds the park at the harbor line, and encloses a little cove that makes in from the harbor. At present, however, the second deck of the pier is reached by steps leading up from the ground. Across the cove, on the easterly side of the park, is a bath-house for women and girls, so that bathing in the open cove is permitted to both sexes at the same time, the accommodations being entirely separate. Another pier borders the easterly side of the park, a channel between the two piers connecting the cove with the harbor. The shore of the cove forms a beach where hundreds of children play in the sand. Commercial street, with its ceaseless stream of travel and business, bounds the water park on the south. Across this street a series of three terraces leading up to the historic Copp's Hill burying-ground forms a picturesque background to the whole. From the middle terrace a bridge is called for in the original plan, to cross Commercial street, and continue in the elevated walk, already described.

Of the thirteen floating baths, six are exclusively for men, five for women, and two are used for both sexes at different hours.

All of the baths, situated as they are on thoroughfares between the city proper and great outlying working-class quarters, are visited by very many laborers on their way to or from their places of work; not a few stopping habitually for a dip. A total attendance of one thousand during the day is not unusual at any one of them.

A new style of floating-bath has been recently devised by one of the bath commissioners which in several respects is a distinct advance upon that in use up to the present time. The tank of this house is left open to the sky, thus ensuring perfect ventilation and facilitating the drying of the floors and walls of the whole interior. Runways extending along either side and fitted with lockers, are substituted for dressing-closets—one runway for adults, the other for children. A house of this description may be seen at Harvard bridge.

The swimming-pools were established to supply summer-baths to the sections of the city without water frontage. One of the pools is at Orchard Park, a small open space with grass and trees in the midst of the tenement district of Roxbury. It consists of a tank made of concrete, eighty feet in length by thirty feet in width and four feet in depth; to which fresh water is supplied from the city pipes. This tank is enclosed merely by a high board fence. Two or three polling booths temporarily fitted up for the pur-

pose afford the necessary dressing accommodations. Great care is taken to keep the water clean; the surface is drawn off several times daily, and once each day the tank is completely emptied and washed out. Every bather before entering the pool must use the shower bath. Between eighty and ninety thousand gallons of water are used daily. This bath is the especial delight of children, who crowd to it in hundreds; but is patronized also by a good number of adults, especially in the evening. As in the case of the floating-baths used by both sexes, but not having separate accommodations for each, the bathing hours are divided between men and boys, women and girls.

In the equipment and management of Boston's free municipal baths a special point is made of securing the patron's comfort and safety, as well as enjoyment. Seats are provided for bathers and friends, ice water is at hand for the thirsty, and at two or three of the larger places bicycles can be checked without charge. At the North End beach a large awning tent affords shelter from the sun. To meet certain slight emergencies that may arise, surgical cases are provided, containing among other things, liniment for bruises, Jamaica ginger to be given in case of cramp, ammonia to restore from fainting, and bandages for cuts and sprains; and the attendants are instructed in the use of these simple remedies and appliances. As a safeguard against accident by drowning at the beaches, trained lifesavers in boats keep constantly near the bathers both to render any needed assistance and to prevent the swimmers from venturing out too far.

From the first the actual use of Boston's municipal baths has been absolutely free to the people. A fee of five cents is charged to adults for the use of bathing suits, except at the North End beach, where suits are furnished free. Children's suits may be had at all the baths without charge. One cent is the price for a towel everywhere. Bathers are permitted to bring their own suits and towels, if they care to do so.

Formerly the supplies of bathing suits and towels were owned by the superintendents, who derived from their rental an income in addition to their salaries. At the beginning of the season just passed, however, the city purchased the stock on hand and added to it in order to meet the increased demand. Its possessions in these lines at present are represented by 1,200 girls' one-part suits; 1,200 women's suits in two parts; 1,800 men's two-part suits; 1,200 men's trunks and 3,600 boys' trunks for the floating baths; and 15,000 towels.

Probably no form of physical exercise combines so many admirable features as swimming. As a mere sport it has few rivals. When to this be added as incidental cleanliness and the ability to save life, swimming takes on a character of practical value. To bring this desirable accomplishment within the reach of all, especially school children, instruction in swimming was given at all the baths for the whole or part of last season.

The new Dover street bath-house, whose erection was provided for by the mayor early in his first term of office, has been completed. Its location was admirably chosen for the purpose in view. Dover street, on which it faces, is part of a thoroughfare crossing the city east and west from one extreme end to the other, and bisecting that district of the South End which is rapidly becoming the great metropolitan poor quarter of Greater Boston. Washington street and Harri-



son avenue, also great highways of travel running north and south, pass one within two blocks of the bath-house, the other within a single block. Thus multitudes of people from all parts of the city and outlying districts are brought daily into its neighborhood.

The building is a simple but imposing structure 43 feet wide by 110 feet deep. The front, which is three stories in height, is constructed of granite up to the second story, and of gray mottled brick with limestone trimmings from this up to the ornamental cornice of the roof. There are two entrances, one for men and one for women. Above these a row of three arched windows extends across the second story. On the first floor are separate waiting rooms for men and women, together with the laundry and engine-room in the rear. On the second floor are separate bath rooms for men and women. The third floor in front of the building contains an apartment for the manager of the baths and his family. The interior of the waiting rooms and bathing apartments have a high wainscoting of Knoxville marble and the partitions of the baths are of the same material. The floors are of terazzo mosaic.

There are thirty sprays and three tubs for men, and eleven sprays and six tubs for women. All the baths are enclosed. Each shower-cabin contains a dressing alcove, with seat. A Gegenstrom apparatus is used, which permits the bather to regulate the temperature of the water to suit himself. Both bathing apartments have toilet-rooms connected with them. The steam supply for all purposes is furnished from the boiler-room of the fire department repair shop, situ-

ated just at the rear of the bath-house lot.

When thirty years ago Boston was considering the matter of providing public bathing facilities, there were no undertakings of the kind in this country for its guidance. Examples had to be sought in England and on the continent. Since that time a number of American cities and towns have made more or less advance in this direction. But the best examples of municipal action in providing cheap and ample bathing are still to be found abroad, notably in Birmingham, Liverpool, London, Berlin and Vienna. And yet the municipal system of baths in English and continental cities lacks the democratic character that it must have in this country. To some extent the baths abroad preserve social distinctions by providing first, second, and, in some cases, third-class baths. In no case are the foreign baths free.

There is a contention in this country that those using public bathing accommodations should pay for the privilege in order to preserve their self-respect; but it is hoped in Boston that in due time the people will come to have something of the same ennobling feeling of ownership and responsibility as to baths which they already entertain with regard to the city's schools, parks and libraries.

—Pulaski, Va., will build an electric plant with a capacity of 23 1,200 c. p. arc and a number of incandescent lights. The estimated cost is \$9,000, and bids will be called for soon. W. G. Wall of Richmond is the engineer.

#### Press Comment.

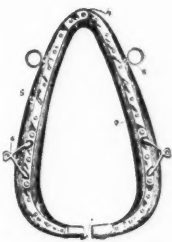
The Paterson, N. J., "Press," in editorially commenting on the coming convention of the League of American Municipalities, says: "It is impossible, of course, to keep the theorists and hobby-riders out of these gatherings, but the programme of this year's Syracuse meeting proves that the accessions of practical men have pushed the hobbyists to the rear and that a lot of real good will be evolved from the discussions and papers. Paterson ought to have a representative at this meeting to bring home some of its wisdom and spirit."

Providence is a member of this League of American Municipalities and has a direct interest in its doings and the topics to be discussed at its coming convention. \* \* \* Taken all in all, the coming convention of this League of American Municipalities should produce far-reaching results toward the betterment of existing conditions and conveniences in our cities. —"Telegram," Providence, R. I.

According to the programme prepared and advance information furnished, some important questions involved in municipal administration are to be discussed at the third annual convention of the League of American Municipalities, which will be held at Syracuse, N. Y., Sept. 19-22. \* \* \* It would pay the city of Scranton to send its councilmen in a body to this convention. —"Tribune," Scranton, Pa.

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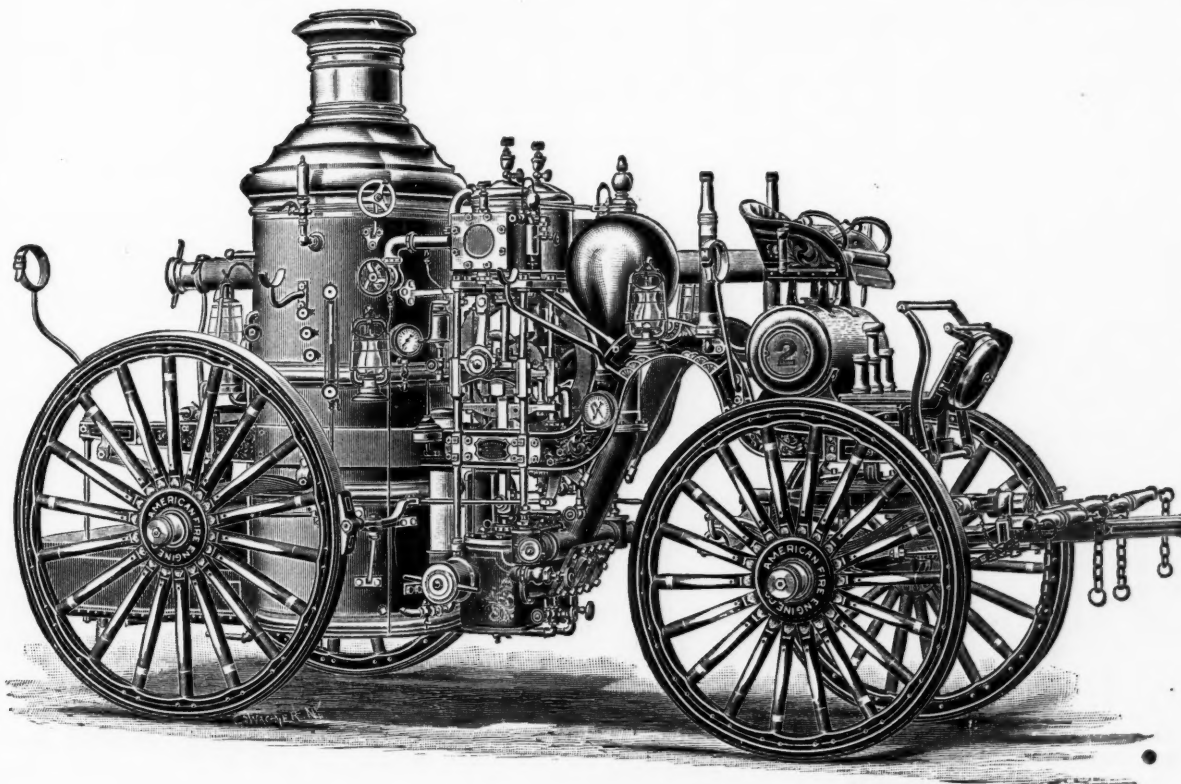
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